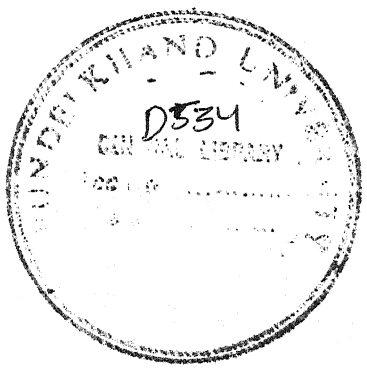
TO STUDY THE SERUM LIPOPROTEIN CHANGES AFTER HYSTERECTOMY WITH OR WITHOUT OOPHERECTOMY

THESIS

FOR

MASTER OF SURGERY

(OBSTETRICS & GYNAECOLOGY)



BUNDELKHAND UNIVERSITY

JHANSI (U. P.)

1993 VANDANA GOYAL

C E R T I F I C A T E

This is to certify that the work entitled "TO STUDY THE SERUM LIPOPROTEIN CHANGES AFTER HYSTERECTOMY WITH OR WITHOUT OOPHERECTOMY" which is being submitted as a thesis for M.S.(Ogstetrics and Gynaecology) has been carried out by DR. VANDANA GOYAL in the Department of Obetetrics and Gynaecology, M.L.B. Medical College, Jhansi.

She has put in the necessary stay in the department as per university regulations.

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A C K N O W L E D G E M E N T

It is with an overwhelming sense of gratitude that I wish to acknowledge all those who made the completion of this thesis possible.

First and foremost is respected Dr.(Mrs.) Mridula Kapoor, M.S., Head, Department of Obstetrics and Gynaecology, M.L.B. Medical College, Jhansi who with her valuable advice and helpful suggestions played an important role in completion of this work.

I am sincerely indebted to my guide Dr. (Mrs.) Sunita Arora, M.S., Associate Professor, Department of Obstetrics and Gynaecology, M.L.B. Medical College,Jhansi who with her kind supervision, invaluable suggestions, constructive criticism and constant encouragement through out has led to the successful completion of this work. I shall forever be indebted to her for kindness and generosity.

I acknowledge with deep gratitude Prof. R.C. Arora, M.D., D.Sc., Head, Department of Medicine, M.L.B. Medical College, Jhansi for his able supervision and for making available to me all facilities to work in his department. His unbeaten quality for expert guidance and keen interest has made me to sail across the ocean of this huge work.

I owe deep and heartful thanks to Dr. Navnit Agarwal, M.D., Assistant Professor, Department of Medicine, for his patience in the elucidating the various aspects of the work carried in this department.

I am also thankful to the faculty members of the department of Obstetrics and Gynaecology - Dr.(Mrs.) Usha Agarwal, M.S., Dr.(Mrs.) Sanjaya Sharma, M.D. and Dr.(Mrs.) Sushila Kharkwal, M.D., for the constant encouragement and guidance rendered by them throughout the study.

I deeply value the mental and moral support of my colleagues throughout the study.

I also thank Mr. Phool Chandra Sachan for the meticulous manner in which he has typed the script of this thesis. I offer my thanks to Sri Ram Sanehi for his expert laboratory assistance.

Finally I wish to acknowledge the kind and benevolent support of my mother-in-law. Without her I would never have been able to find the strength to finish my work. I also wish to mention my husband Dr. Vimal Singhal, M.S. and my loving daughter Dishipriya who have sacrificed a lot and borne my absence without murmur. No success of mine is apart from them and it is to them I dedicate this work.

Dated:

Vandana Goyal

(Vandana Goyal)

C O N T E N T

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I N T R O D U C T I O N

INTRODUCTION

In studies which have been conducted in past decades regarding lipid lipoprotein profile had been largely in light of atherosclerosis (AS).

This atherosclerosis is the outcome of interaction of many factors viz. obesity, diabetes mellitus, stress, family history of ischaemic heart disease, sedentary habits, hypercholesterolemia, age, smoking, hypertension and sex.

There are striking sex difference of disease prevalence (Strong et al, 1979) being higher in males. Possible explanation lies in difference in endocrine make up of men. The incidence of cardiovascular disease as shown in Framingham study is also greater in postmenopausal as compared to premenopausal women of same age (Gordon et al, 1978).

The current median age of menopause is 50 years that is permanent cessation of menses from loss of ovarian function but approximately 8% of women undergo menopause before the age of 40 years.

Hysterectomy with or without removal of both the ovaries is the most frequently performed major operation in premenopausal women thus inducing surgical menopause.

The concept that women are protected premenopausally against coronary heart disease could be because

an endogenous protective factor which is present in reproductive years viz oestrogen.

Lower incidence of coronary heart disease in females has led to many to believe that endocrine factors are of importance for the homeostasis of lipids in plasma but also for the deposition and metabolism of lipids in vessel wall. Difference in cardiovascular disease with advancing age which is attributed to the onset of menopause. Thus one can suggest the premature menopause and that induced surgically at a younger age can have a greater impact or increased incidence of coronary heart disease as compared to women who remain menopausal. Menopause whether spontaneous or induced surgically manifests symptomatically due to end organ changes due to oestrogen deficiency.

The flashes pathognomonic symptoms are usually acute and short lived. Oestrogen deficiency causes skin to become thinner and wrinkled. Itching bleeding or dyspareunia due to changes in the genital tract and anxiety depression often appear in the menopausal period. Declining oestrogen level lead to increase rate of bone resorption and urinary excretion of calcium resulting in reduced bone density or osteoporosis.

Various epidemiological studies over the past three decades have documented a linear relationship

between coronary heart disease, risk in the general population and the lipoprotein values which are proportional to the serum total cholesterol.

Lipids by their biochemical structure are insoluble in water and there is special carrier particles 'Lipoproteins' for their transportation in circulation.

Lipid components can be evaluated in the terms of serum total cholesterol, triglycerides and high density lipoprotein (HDL), low density lipoproteins(LDL) and very low density lipoprotein (VLDL) cholesterol fractions. In liver function lipid and lipoprotein metabolism is an important aspect. HDL at present regarded as cholesterol regulators which transfer cholesterol from peripheral tissues, including vascular endothelium to liver and subsequent cholesterol excretion through bile. HDL has also been suggested to block peripheral receptors thereby reducing cholesterol uptake and storage in the epithelial cells.

More than 90% of plasma cholesterol is carried by LDL and HDL. Concentration of LDL cholesterol is directly related to and predictive of cardiovascular disease over a wide range. This relation underlies the association between cardiovascular disease and serum cholesterol. For later reflects LDL concentration. Moreover, morbidity and mortality rates from cardiovascular

disease in different communities are directly and linearly related with serum concentration of total cholesterol and LDL. The ratio of LDL/HDL is about as efficient as any other lipid profile, a ratio of 5 indicates average high risk.

Various studies have indicated an increase in STC and LDL level suggesting that lack of ovarian function particularly oestrogen is responsible for it or menopause or after oopherectomy. This concept has been greatly re-inforced by observations that serum lipid patterns and plasma cholesterol levels can be altered by administration of oestrogens.

Functioning ovaries provides protection against coronary heart disease likely because of oestrogen production which increases HDL-c and reduces LDL cholesterol. Work by Imai et al (1980) indicated that it is not the free cholesterol which causes the intimal damage but rather abnormal oxidation product by cholesterol. Oestrogen somehow pregents abnormal oxidation. Thus a group of non castrated women would be expected to be at less risk as compared to castrated women of same age group.

A study was carried out in our department in previous year to know the lipoprotein changes after castration, but it could not find any significant changes in 3 months after operation. Six month follow up of this study was done by present study. As there are very few

studies on Indian females, the present study was undertaken in our department with the following aims :

1. To study the changes in serum lipoprotein levels in relation to hormonal status in 6 months of hysterectomy with or without oopherectomy.
2. To study the basal serum lipoprotein level in relation to hormonal status in patients undergoing hysterectomy with or without oopherectomy.
3. To study the post operative serum lipoprotein profile in relation to induced hormonal status and quantitative and qualitative comparison of them between hysterectomy, unilateral oopherectomy and bilateral oopherectomy.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

GENERAL

The massive study on serum lipid lipoprotein profiles on healthy and diseased individuals is to reveal the mysteries of the most important pathogenic entity i.e. atherosclerosis.

For the process of atherosclerosis hypercholesterolemia is one of the important risk factors. A risk factor may be defined as "any habit or trait that can be used to predict an individual probability of developing that disease (Dhewpublication, 1981). Altered level of serum lipoproteins in particular elevated low density lipoproteins(LDL and diminished high density lipoproteins (HDL) appears to be strongest among other lipid levels. Moreover other factors viz. age, sex, smoking, obesity, hypertension, stress, impaired glucose tolerance (Diana B Petitti, 1979) and dietary habits and sedentary life style exert their influence on lipoprotein levels and thus the development of atherosclerosis. Many are reversible but others like age, sex, genetic factors are irreversible ones.

There are at least three independent prediction of risk for individuals. They are plasma cholesterol concentration (Ross, 1986; Inkeles and Eissenberg, 1981), cigarette smoking(Wissler, 1976) and elevated blood

pressure (Oberman Harlan et al, 1969).

To understand the pathogenesis the accumulation of fat in the arterial wall is typical sign of atherosclerosis. This uptake depends upon plasma lipids level as well as individual arterial wall factors and the uptake is largely of LDL cholesterol. Significant hyperlipoproteinemia is considered in those individuals who when below 20 years age has total serum cholesterol exceeding 200 mg% or plasma triglyceride levels exceeding 140 mg% while in those above 20 years of age the values should exceed 240 mg% for STC and plasma triglyceride more than 200 mg% usually individuals who are afflicted with atherosclerosis have more than one risk factor at a time.

Mayer (1981) and Harper gave the range of various fractions in human plasma. Total lipids range between 360-820 mg%. Total cholesterol b/w 107-320 mg% and triglyceride between 80-180 mg%.

HISTORICAL ASPECT

Lesions of atherosclerosis were identified in Egyptian mummies as early as fifteenth century B.C.. In mid nineteenth century Virchow made concept of injury to the arterial wall associated with inflammatory response resulting in lesion of atherosclerosis. Modern view started to stem from work of John French who noted that structural integrity of endothelial lining of artery was key to maintenance of normal functions and any breach to it might precede a sequential events to lesions of

atherosclerosis. There after over many years, many theories concerning the etiology and pathogenesis of atherosclerosis has been put forth of which response to injury, monoclonal hypothesis and lipogenic hypothesis needs mention.

LIPID LIPOPROTEIN METABOLISM AND ATHEROSCLEROSIS

These are high molecule weight globular particles that transport nonpolar lipids primarily triglyceride and cholesteryl ester through plasma. Each lipoprotein particle contains a core of hydrophobic triglyceride and cholesteryl ester in various proportions with a polar surface monolayer of phospholipids along with unesterified cholesterol to stabilize the particle. It also contains specific apoprotein on surface which helps in binding to specific enzyme or transport protein on cell membrane.

Lipoproteins are divided according to their relative amount of protein and lipid and electrophoretic mobility into 4 major classes as chylomicrons, high density lipoprotein(HDL), low density lipoprotein(LDL) and very low density lipoprotein(VLDL). LDL is further divided into LDL_1 and LDL_2 and HDL into HDL_2 and HDL_3.

EXOGENOUS PATHWAY

The chylomicrons large triglycerides rich particles are produced in the intestine from dietary fat. Hence they are normally not present in plasma after fast of 12-14 hours. They are catabolized by lipoproteins

lipase and hepatic lipase to form chylomicrons remnants triglycerides form free fatty acids (FFA).

ENDOGENOUS PATHWAY

VLDL synthesis occurs in liver and increased in obese. VLDL, triglycerides are hydrolysed by lipoprotein lipase and hepatic lipase.

LDL_3 are major cholesterol carrying lipoprotein and most of it comes VLDL catabolism while some are synthesized directly. LDL when degraded return to cell as free cholesterol.

Direct HDL production occurs in liver and intestine and also derived from chylomicrons and VLDL catabolism. HDL serves as acceptor of lipid especially free cholesterol from peripheral tissues including vascular endothelium to the liver where excretion occurs through bile involving plasma enzymes. HDL has also been suggested to block peripheral LDL receptors thereby reducing cholesterol uptake and storage in epithelial cells of vessels thus an impairment of HDL levels accelerates the excess deposition of fat in vessel wall.

Patients with IHD usually have raised triglyceride and cholesterol concentration (Lewis et al,1974) and subnormal HDL levels (Castelli et al, 1977).

RISK GROUP

To relate risk to level of LDL than high risk group includes individuals with LDL more than 170 mg/dl.

Low risk group for values less than 100 mg/dl and intermediate risk group for values 100-170 mg/dl. Recently ratio of LDL : HDL has been used as another indicator of risk. Individual with ratio greater than 5 as high risk group, values 3-5 at significant risk and at value 3 at average risk, values 2-3 at moderate risk.

WOMEN AND CARDIOVASCULAR DISEASE (CVD)

There is an almost universal clinical impression that CVD are more common in men than in women, a rate twice to that of women in age younger than 60. However, sex difference decreased with advancing age possibly due to menopause (Kannel et al, 1976).

Age specific death rates for CVD among women are substantially less than those of men the same age disparity is less pronounced after age 60 (Wolf, 1991).

Lower incidence of coronary heart disease in females has led to many to believe that endocrine factors are of importance for the homeostasis of lipid in the plasma but also for the deposition and metabolism of lipids in vessel wall.

LIPID LIPOPROTEIN LEVELS IN PRE AND POST MENOPAUSAL WOMEN AND CVD

In premenopausal women there is 15-20% cyclical suppression of total plasma cholesterol, HDL and LDL apo beta during luteal phase and HDL increases slightly during the second half of cycle (Kim and Kalkhoff et al,

1981). Young women of child bearing age has significantly low incidence of CVD than man of same age group, but this difference of incidence decreases with advancing age suggesting protective ovarian function and comes equal to that of man after age of 55-60 years. This fact is supported by study of James et al (1955), Weinrub et al (1957), Oliver et al (1959), Bengtson (1973) and Gordon et al (1978) that female undergoing early menopause were observed to have higher rate of CVD than with those of late menopause of same age group.

The possible reason for above fact has been suggested by lack of ovarian function and of oestrogens (Sjnajderman et al, 1963). Oestrogen a safety factor causing increase HDL lowering of LDL and total cholesterol. It is not the free cholesterol that causes intimal damage of vessel but rather abnormal oxidation products of cholesterol. Oestrogens do protect against abnormal oxidation products (Imai et al, 1980).

Exogenous progesteron has just opposite effect on lipid lipoprotein levels (Bradley, 1982 and Wingerd et al, 1982).

Total cholesterol and LDL tended to rise during the early postmenopausal years while HDL do not change (Don Gambrell et al, 1991).

HYSTERECTOMIZED WOMEN AND PROTECTIVE OVARIAN FUNCTION

It has been suggested that functioning ovaries provide protection against CVD, thus hysterectomized women (non castrated) have ovarian function sufficient to exert protection against CVD, this fact was verified by several experiments.

Biological and Chemical Measurements

Normal level of urinary gonadotrophins and pregnandediol in hysterectomized women have suggested, maintained ovarian function (Knutsenk, 1951; Disilveria et al, 1956; Whitelaw, 1958). Whereas Marx et al (1951) and Rust (1951) found increased gonadotrophins after hysterectomy only suggesting reduced ovarian function. It appeared to be related to the amount of interference with ovarian blood and nerve supply during operation.

Basal Temperature Curves

Hysterectomized women show a normal cyclical temperature curve for a period of about 4 years after operation (Fredrikson, 1952) and none of the oopherectomized woman shows this type of curve (Whitelaw, 1958).

Vaginal Smears

Bancroft-Livingston (1954) found that active vaginal smears were found in 95% of the hysterectomised women within 3 years of operation while in 60% after 5 years.

Gordon et al (1978), Colditz et al (1987) found in their studies that women had undergon bilateral oopherectomy had increased risk of coronary heart disease as compared to hysterectomy alone.

Whereby a contrary study by Ritterband (1963) found to significant difference in the prevalence of coronary heart disease in oopherectomised and hysterectomised women.

PREMATURE MENOPAUSE AND RISK OF CVD

Extensive post mortem studies by Aekerman et al (1950) and Wuest Dry and Edward (1953) demonstrated a direct relation of early castration with severity of CVD. Snazzerdan and Oliver (1963) and Higano (1963) found increased incidence of CVD in prematurely oopherectomised group.

Severity of disease has direct relation with the time interval from castration to premenopause, those castrated before age 40 and are expected to survive more than 14 years after castration are at high risk to developing coronary heart disease (Parrish et al, 1967 and Rosenberg et al, 1981).

Unilateral oopherectomy however increases less incidence of CVD in women in comparison to bilateral oopherectomy(Oliver and Boyd, 1959; Colditz et al, 1987).

OVARIAN AND ADRENAL STEROID PRODUCTION IN POSTMENOPAUSAL WOMEN

Relative contribution of ovaries and adrenals to the pool of steroids in post menopausal women is still the subject of controversy.

After menopause ovary releases androgens to the plasma. These get aromatised at extragonadal site into oestrogens (Mattingly et al, 1969). Androgens which are secreted mainly testosterone and moderate amount of androstendione. Ovary also secretes low levels of estrone (Judd et al, 1974). Robert et al (1976) assayed estradiol, androstendione and testosteron in peripheral blood, adrenal and ovarian vein of 11 postmenopausal women. Intravenous administration of HCG resulted in increased androgen production by the ovaries but not oestrogen while intravenous administration of ACTH hormone did not result in enhancement of ovarian and adrenal estrogens.

EFFECT OF HYSTERECTOMY WITH OR WITHOUT OOPHERECTOMY ON LIPOPROTEIN METABOLISM

1. SERUM CHOLESTEROL

Increased serum cholesterol levels are regarded as an important risk factor for CVD. Oliver and Boyd (1959) showed significant rise in serum cholesterol in oopherectomised women. This rise occurs significantly in premature menopausal women in comparison to premenopausal

women of same age group (Sznajderman et al, 1963). Arnold Ritterband et al (1963) and Aitken et al (1971) concluded same results. Whereas Punnonen and Rauramo (1976) showed contradictory results. They found no significant rise in serum cholesterol levels after bilateral oopherectomy.

William and Kannel et al (1976) also showed increased serum cholesterol level in menopausal women than premenopausal women.

Bengston and Lindquist (1979) and carlton & Simons (1980) found significant rise in serum cholesterol levels after surgical menopause. This was supported also by Notelowitz et al (1983) and Pansini et al (1984).

Jenson et al (1987) showed that both natural and surgical menopause are accompanied by high serum cholesterol.

Farish et al (1990) showed significant increase in total cholesterol at 6 weeks after oopherectomy and no significant change thereafter. Mitra and Asthana (1993) found no significant difference in levels of cholesterol after one month of operation.

2. SERUM TRIGLYCERIDES

Oliver and Boyd (1959), Sznajderman et al(1963) showed that serum triglycerides were significantly raised in study group of women with premature menopause as compared to healthy women of same age group.

This has also been supported by studies of Punnonen and Rauramo (1976), Carlton et al(1980) and Notelowitz et al (1983). They showed significant rise in serum triglyceride levels after one month of castration.

On the contrary study by Aitken et al (1971) showed significant rise in serum triglyceride with age, however, women without ovaries had slightly lower triglyceride value and a significantly slower rate of increase of serum triglyceride with age than women with intact ovaries. Pansini et al (1984), Farish et al (1990) also did not show any significant rise in triglyceride levels within three months of castration.

Mitra and Asthana (1993) did not find any statistically significant change in serum triglyceride after bilateral oopherectomy.

3. HIGH DENSITY LIPOPROTEIN(HDL)

HDL is heterogenous group and has got two main subfractions HDL_2 and HDL_3. Low levels of HDL_2 are clearly related to high risk of atherogenesity while HDL_3 and total HDL not. Concentration of HDL_2 is higher in women than in men and the increased by oestrogen hypertriglyceridemia. Exogenous androgen and progesteron lowers the HDL level.

In females there is a small linear increase in levels from childhood to about 60 years but there is no significant change in alpha fraction (William and Kannel,

1976). Punnonen and Rauramo (1980) showed that HDL levels before and one month after castration did not change significantly.

Notelowitz et al (1983) showed that HDL levels in oopherectomised women were 27% lower than in intact women.

Pansini et al (1984) showed early decrease and subsequent increase levels of HDL within 3 months of oopherectomy which were apoprotein mediated.

Farish et al (1990) measured HDL subfractions to assess any change in relative amounts of cholesterol carried on HDL_2 and HDL_3. No significant change was found in either fraction.

Kushwaha et al (1991) found very little effect on HDL levels in oopherectomised baboons.

Mitra and Asthana (1993) did not find any difference in HDL levels in bilaterally oopherectomised women.

4. LDL AND VLDL

VLDL is endogenously produced lipoprotein (in liver) and contains apo beta 100. It is 20% of serum triglyceride. Its function is to transport cholesterol and endogenously produced triglyceride to body tissues. Metabolites are used for energy during the metabolic process and remnants left behind are taken by liver and converted to LDL. Accumulation of remnants favour atherogenesis and oestrogen reported to accelerate the clearance of remnants.

LDLs are major cholesterol carrying lipoproteins. Liver uses them for synthesis of bile acids and free cholesterol is secreted in bile.

Arnold B Ritterband (1963) showed that mean serum cholesterol and percent of beta lipoprotein in oopherectomised women under 50 were higher the hysterectomised women.

William and Kannel et al (1976) showed cholesterol in the prebeta fraction and beta fraction for women rises rapidly while remaining essentially unchanged for men older than that age group.

Notelowitz et al (1983) showed that relative proportion of LDL and or VLDL did not differ significantly in oopherectomised women and intact women.

Pansini et al (1984) showed biphasic change in apoprotein beta levels in oopherectomised women within three months. Farish et al (1990) showed a significant rise in LDL cholesterol in the 6 weeks after bilateral rise in LDL cholesterol in the 6 weeks after bilateral oopherectomy from a mean of 3.57 m mol to 4.21 m mol/l.

Mitra and Asthana (1993) did not find any significant rise in LDL and VLDL levels after one month of castration.

EFFECTS OF OESTROGENS IN FEMALES

Aitken (1971) showed that administration of 20-40 kg of mestronol daily in oopherectomised. Women

was associated with significant fall in serum cholesterol and a significant rise in serum triglycerides.

Gustafson and Svanborg (1972) gave an estrogenic steroid in oopherectomised females and found significant rise in HDL and VLDL and decrease in LDL levels.

Patterson et al (1980) showed significantly reduced mean serum cholesterol and significant rise in serum triglyceride with sequential oestradiol valerate and norgestrel in post menopausal women.

A study from Howard Medical School, Stamfer et al (1985), examined subjects in which approximately 50% has used oestrogen at some time and 35% were current users (Primarin or conjugated oestrogen) in dosage of 1.2 or 0.6 mg/day. The risk of myocardial infarction either fatal or nonfatal, was approximately half of that who had never used them. Of the current users the risk was about one third of that who never used oestrogen.

Another study by Wilson et al (1985) gave conflicting results. The effect of oestrogen use on morbidity from CVD in post menopausal group gives a over 50% elevated risk for cardiovascular disease as compared with women group who had not taken oestrogen.

ORAL CONTRACEPTIVES AND CAD

Since oral contraceptives have both oestrogen and progestrone in varying quantities, and opposite effect of both on lipid lipoprotein profile, the study of Mammet

et al (1975) was first to demonstrate an increased risk of acute myocardial infarction with its use. The relative risk of users is as 4.5 as compared with non users.

Later studies of Linquist (1982), Royal College of Gneral Practitioner (1974), Vessay et al (1976), Solonem (1986) etc. showed similar association.

Engle et al (1983) showed role of oral contraceptives in developing myocardial infarction without atherosclerosis in more than 80% of their studied subjects. However, cigarette smoking was common in subjects.

LIPOPROTEINS AS PREDICTOR OF CAD

More than 90% of plasma cholesterol is carried by LDL and HDL. Concentration of LDL cholesterol are directly related to and predictive of CAD over a wide range(Gordon et al, 1981). This relation underlies the association between CAD and serum cholesterol for later reflects LDL concentration (Kannel et al, 1979). Moreover, morbidity and mortality rates from CAD in different communities are directly and linearly related with serum concentration of STC and LDL(Lewis et al, 1978). HDL concentration are even more strongly predictive of the risk of coronary heart disease in most (Gordon et al,1981 & Goldbourt and Medatia, 1979) but not in all the persons(Wiklund et al, 1980).

Hyperlipidaemias as well as other risk factors probably run in families and may thus support the above concept for the development of CAD in individuals.

The ratio of LDL/HDL is about as efficient as any other lipid profile (Kannel et al, 1979). A ratio of 5 indicates average high risk, and beyond this are a definite cause of concern.

MATERIAL AND METHODS

MATERIAL AND METHODS

Present study was carried out in the departments of Obstetrics & Gynaecology and Medicine, M.L.B. Medical College, Hospital, Jhansi in a period of twelve months.

SELECTION OF CASES

Case material for the present study comprised of 75 female patients of age from 30 to 60 years. In which 30 cases were selected from study of previous year carried out in same departments. These had been gone under hysterectomy with or without oopherectomy. Follow up upto three months after operation was taken in this study. Present study comprised 6th month follow up of these cases.

Rest 45 cases comprised of female patients admitted in the department of Obstetrics and Gynaecology who were undergoing hysterectomy with or without oopherectomy.

Original study of previous year had a large list of volunteers from which only 30 cases could be selected. It was largely because most of the cases could not turn up due to their uneventful postoperative period or distant residence or were ignorant. All the subjects were completely investigated with detailed history and physical examination.

STUDY GROUP

All the subjects were divided into two major groups :

Group A

Cases of previous study who had gone under hysterectomy with or without oopherectomy were kept in this group.

Group B

New cases who were undergoing hysterectomy with or without oopherectomy were kept in group B.

Group A was further divided into two subgroups according to their menstrual status at the time of operation.

A-I : Premenopausal women.

A-II : Postmenopausal women.

Subjects of A-I group were further subdivided into following groups :

Group A-Ia : Women underwent hysterectomy only.

Group A-Ib : Women underwent hysterectomy with unilateral oopherectomy.

Group A-Ic : Women who underwent hysterectomy with bilateral oopherectomy.

Group A-II : Women who underwent hysterectomy only.

FOR GROUP B (NEW CASES)

Charts were made for individual subjects and the pattern of changes of lipid lipoprotein profile was noted. Remarks were specifically given for any marked change in

any factor viz. smoking, use of oral contraceptives, hormonal therapy prior to surgery and finally conclusion was drawn regarding the change in lipid levels.

METHOD

Informed consent was taken from each subject. All chosen subjects were examined in detail as regards their name, age, address, socioeconomic status, detailed history of present illness, past history, dietary history, family history and history of intake of any hormonal preparation prior to surgery. A detail general and systemic examination with special reference to height, weight, blood pressure, was done. Gynaecological examination per speculum and per vaginal were done to assess the indication of hysterectomy. The aid of various investigation like vaginal cytology, biopsy, ultrasound was utilized to confirm the diagnosis. Relevant investigations viz. blood sugar and urea, TLC, DLC, Hb%, ESR and urinalysis, E.C.G. and X-ray were done in each case.

All the samples were collected after 12-14 hours fasting. Five ml of blood was withdrawn from antecubital vein of the patient in recumbent posture without producing venous stasis (Koerselman et al, 1961). Blood was allowed to settle down for half an hour and then centrifuged and serum was preserved with standard precautions.

PERIOD OF COLLECTION OF BLOOD SAMPLE

For group A : Fasting sample after 6 month of operation.

Group B : 1. Pre-operative.

2. On 3rd post operative day.

3. On 10th post operative day.

4. After 1 month of operation.

METHOD OF ESTIMATION OF VARIOUS LIPID FACTORS

Collected serum was put to followsing tests

1. Serum Total Cholesterol (STC)

This estimation was done by commercial kit supplied by Ethnor. Basic principle is that cholesterol reacts with kits solution of ferric perchlorate, ethyl acetate and sulphuric acid and gives levender coloured complex which is measured colorimetrically at the optical density (OD) of 560-600 nm.

2. Serum Triglyceride (STG)

Serum triglyceride was estimated by acetyle acetone method. Principle behind this is that triglyceride are determined by measuring glycerol after its liberation from fatty acids by saponification glycerol is oxidised by sodium metaperiodate to form aldehyde which is directly proportional to the amount of triglycerides.

3. Serum High Density Lipoprotein (HDL)

HDL were estimated by utilizing commercial kit supplied by Ethnor. Basic principle is that HDL cholesterol fraction is separated by using a precipitating

reagent. The precipitants contain chylomicrons, VLDL, LDL which are removed by centrifugation. The supernatants contain HDL cholesterol which is estimated by HDL-c colour reagent which gives purple coloured complex which is measured by colorimetrically at optical density of 560 nm. The intensity of colours developed is proportional to the concentration of HDL cholesterol in the specimen under test.

4. Serum Very Low Density Lipoprotein (VLDL)

It was calculated by using formula given by Friedwald et al (1972). It is valid upto STG values to less than 400 mg%.

$$\text{VLDL (mg\%)} = \text{STG}/5.$$

5. Serum Low Density Lipoproteins (LDL)

It was calculated by the formula given by Fredrickson DS (1972) :

$$\text{LDL (mg\%)} = \text{STC} - (\text{STG}/5 + \text{HDL})$$
$$= \text{STC} - (\text{VLDL} + \text{HDL})$$

Statistical Method used

Student 'T' test was used in the statistical analysis to compared the mean values of different groups in group A.

O B S E R V A T I O N S

OBSERVATIONS

In the present study 75 patients were studied. In which 30 cases were selected from study of previous year. Observed results of these cases are mentioned in various table forms. Individual tabulations have been made separately for new cases. Each table is preceded by the details of subject and followed by remarks for the table.

Abbreviations used in every table are as follows :

STC	:	Serum total cholesterol.
LDL	:	Serum low density lipoprotein.
HDL	:	Serum high density lipoprotein.
Wt	:	Weight (kgs).
Ht	:	Height (Inches).
O/H	:	Obstetrical history.
M/H	:	Menstrual history.
C/H	:	Contraceptive history.
D/H	:	Dietary history.
V/NV	:	Vegetarian/Non-vegetarian
0 day	:	Pre-operative day.
PO3	:	3rd post operative day.
PO10	:	10th post operative day.

OBSERVATION TABLE FOR GROUP A

TABLE 1 : Distribution of patients in various groups.

Group	Type of hysterectomy	Age range (years)	No.of cases	Percentage
A-I	Premenopausal			
A-Ia	Hysterectomy only	30-38	5	16.60
A-Ib	Hysterectomy with unilateral oopherectomy	30-45	7	23.30
A-Ic	Hysterectomy with bilateral oopherectomy	38-50	9	30.00
A-II	Post menopausal (Hysterectomy only)	40-67	9	30.00

TABLE 2 : Distribution of patients according to indication for hysterectomy with or without oopherectomy.

Indication of hysterectomy	No.of cases	Percentage
Group A-I		
Functional uterine bleeding	11	36.6
Bad cervix	5	16.6
Pelvic inflammatory disease	1	3.3
Fibroid uterus	2	6.6
Prolapse uterus	1	3.3
Adenomyosis	1	3.3
Group A-II		
Prolapse Uterus	9	30.0

TABLE 3 : Effect of hysterectomy with or without oopherectomy on STC concentration in group A-I and A-II.

Group	0 day	PO3	PO10	1 m	3 m	6 m
A-Ia	180.60 ±22.82	174.60 ±14.37	180.00 ±21.84	179.00 ±22.20	176.00 ±23.33	178.00 ±22.90
A-Ib	163.00 ±24.40	158.70 ±16.70	163.10 ±18.90	167.50 ±19.40	167.00 ±17.90	171.50 ±22.70
A-Ic	153.60 ±19.80	150.70 ±18.40	154.30 ±18.60	164.40 ±20.40	165.70 ±24.16	167.10 ±22.50
A-II	165.00 ±15.60	162.20 ±15.30	165.80 ±13.80	166.20 ±16.50	165.80 ±15.80	168.50 ±17.59

It is evident from the table 3, that there was no significant change in STC level in group A-Ia and A-II. There was rise in STC level at 1 month and 6 month in group A-Ib and A-Ic but the rise was not significant.

TABLE 4 : Effect of hysterectomy with or without oopherectomy on STG concentration in group A-I and A-II (Mean±S.D., mg/dl).

Group	0 day	PO3	PO10	1 m	3 m	6 m
A-Ia	104.20 ±21.27	100.60 ±16.47	89.60 ±18.03	97.20 ±18.72	96.20 ±17.72	95.60 ±17.08
A-Ib	103.10 ±33.56	99.80 ±28.90	100.70 ±31.40	106.60 ±30.60	106.60 ±30.60	107.20 ±32.40
A-Ic	97.30 ±12.85	94.40 ±12.06	109.30 ±15.06	102.00 ±10.79	104.30 ±11.09	102.30 ±11.03
A-II	108.80 ±15.05	105.10 ±13.66	106.50 ±13.72	106.40 ±11.60	106.70 ±15.80	108.70 ±12.38

It is evident from table 4 that there was a fall in STG level in group A-Ia and A-II and rise in STG level in group A-Ib and A-Ic. There was no significant variation at 6 month from one month levels. Conclusion may be drawn that changes occur upto 1 month maximally thereafter no change occurs significantly.

TABLE 5 : Effect of hysterectomy with or without oopherectomy on HDL levels in group A-I and A-II (Mean±S.D., mg/dl).

Group	0 day	PO3	PO10	1 m	3 m	6 m
A-Ia	53.80 ±10.59	54.60 ±10.90	56.00 ±11.32	53.00 ±10.52	48.60 ± 9.80	52.00 ±10.10
A-Ib	57.00 ± 9.39	53.80 ± 8.50	54.00 ± 8.34	55.40 ± 7.90	54.80 ±7.95	52.70 ± 7.64
A-Ic	48.40 ±12.76	46.60 ± 7.40	49.10 ±10.79	50.50 ±10.51	48.30 ± 9.79	50.00 ±11.70
A-II	51.20 ±10.07	49.00 ±11.72	49.40 ±11.70	50.50 ±11.24	50.80 ±11.32	49.60 ±11.17

It is evident from table 5 that there was no significant fall in HDL levels upto one month in all the subgroups. No significant change was observed in 6 month and one month levels.

TABLE 6 : Effect of hysterectomy with or without oopherectomy on LDL concentration in group A-I and A-II(Mean±S.D., mg/dl).

Group	0 day	PO3	PO10	1 m	3 m	6 m
A-Ia	105.90 ±32.90	103.28 ±34.80	105.88 ±32.80	110.56 ±27.60	105.30 ± 31.80	106.88 ±28.50
A-Ib	86.30 ±15.97	86.02 ±11.90	89.50 ±12.05	91.20 ±15.16	91.20 ±15.15	97.40 ±16.61
A-Ic	85.70 ±12.05	85.00 ±12.31	86.46 ±12.34	93.50 ±13.96	96.40 ±17.07	102.20 ±10.70
A-II	93.90 ±22.30	92.90 ±18.52	95.10 ±23.15	94.30 ±25.90	93.80 ±22.75	97.10 ±25.63

It is evident from table 6 that there was no significant variation in lipoprotein levels in all the group however, LDL rose significantly at one month in group A-Ic.Levels at one month and 6 month were not statistically significantly different.

TABLE 7 : Effect of hysterectomy with or without oopherectomy on LDL/HDL ratio in group A-I and A-II (Mean±S.D.).

Group	0 day	PO3	PO10	1 m	3 m	6 m
A-Ia	1.98 ±0.90	2.16 ±1.20	2.16 ±1.20	2.16 ±1.20	1.96 ±0.76	2.14 ±0.95
A-Ib	1.51 ±0.45	1.50 ±0.47	1.64 ±0.43	1.64 ±0.44	1.70 ±0.54	1.50 ±0.54
A-Ic	1.85 ±0.55	1.86 ±0.61	1.80 ±0.58	1.87 ±0.51	1.86 ±0.44	3.10 ±0.69
A-II	1.97 ±0.91	2.00 ±0.95	2.08 ±1002	2.00 ±0.98	1.72 ±0.88	2.10 ±1.00

It is evident from table 7 that in group A-Ia, A-Ib and A-II there was no significant change in LDL/HDL ratio after one month. In group A-Ic there was some rise after 6 month of operation. So the changes occurred maximally upto one month, thereafter change gradually.

OBSERVATIONS TABLES FOR GROUP B

TABLE 8

Name : Deva bai
Age : 60 years
Weight: 45 kg
Height: 60"
Physical Activity: Mild
O/H : P3Ao
M/H : Post menopausal
C/H : None.

Dietary History : V
Indication : Prolapse uterus
Operation : Hysterectomy
Any other : None
MRD No. : 1169
Address : W/o Kharge
Jalgaon, Pandokhar
Gwalior

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	180	68	13.6	128.4	38	3.3
PO3	156	65	13	107	36	2.9
PO10	170	70	14	124	32	3.8

REMARKS

1. There was a fall on 3rd POD in STC levels with further rise on 10th POD, but the levels were still below than the basal level.
2. There was insignificant rise in STG levels.
3. LDL showed a fall on 3rd POD, there was a rise again on 10th POD but levels could not approach to basal level.
4. There was minimal fall in HDL levels with minimal change in LDL/HDL ratio.

It is evident from the above observations that there is no rise in levels of STC, STG and LDL and minimal change in HDL after hysterectomy alone.

TABLE 9

Name	: Shanti	Dietary History	: V
Age	: 32 years	Indication	: Bad Cx
Weight	: 46 kg	Operation	: Hysterectomy
Height	: 61"	Anyother	: None
Physical Activity	: Mild	MRD No.	: 2266
O/H	: P4	Address	: W/o Nand Kishore Chiargaon, Jhansi.
M/H	: Premenopausal		
C/H	: Ligation		

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	167	60	12	105	50	2.1
PO3	150	55	11	93	46	2.02
PO10	180	62	12.4	123.6	44	2.8

REMARKS

1. STC showed a rise on 10th POD in its levels with fall on 3rd POD there was slight variation in STG levels.
2. LDL levels showed significant rise on 10th POD, while HDL levels showed a fall in its levels. There was unfavourable progression in LDL/HDL ratio.

Observations studied above shows that there is rise in STC and LDL levels and fall in HDL levels postoperatively which might be explained due to stress or other factors.

TABLE 10

Name : Vidya

Age : 40 years

Weight: 45 kg

Height: 61"

Physical activity : Mild

O/H : P4Ao

M/H : Premenopausal

C/H : Ligation

Dietary History : V

Indication : Prolapse uterus

Operation : Hysterectomy

Any other : None

MRD No. : 12182

Address : Semai, Datia

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	145	104	20.8	68.2	56	1.21
PO3	142	100	20	69	53	1.30
PO10	146	98	19.6	80.6	53	1.52

REMARKS

1. STC showed no variation in its levels and minimal fall in STG levels postoperatively.
2. There was rise in LDL levels on 10th POD with very small rise in LDL/HDL ratio.

Observation studied above shows that there is no significant change in lipoprotein levels after hysterectomy only. It could be concluded that there was no hormonal change which would have been changed in lipid levels.

TABLE 11

Name : Ramrati

Age : 35 years

Weight: 48 kg

Height: 60"

Physical: Mild Activity

O/H : P2A1

M/H : Premenopausal

C/H : None

Dietary History : V

Indication : Prolapse uterus

Operation : Hysterectomy

Any other : None

MRD No. : 11699

Address: W/o Panna Rai
Dhorka, Poonch
Jhansi

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	150	100	20	95	35	2.7
PO3	133	100	20	73	40	1.82
PO10	133	100	20	73	40	1.82

REMARKS

1. STC showed a fall from its basal value on 3rd and 10th POD. STG levels were largely constant post operatively.
2. There was fall in LDL levels from basal value.
3. There was minimal rise in HDL levels.

Observations studied above shows that there was a fall in STC and LDL levels with insignificant rise in HDL levels after hysterectomy only. This fall could be explained due to fasting state of patients, post operatively.

TABLE 12

Name : Heerabai

Age : 60 years

Weight : 45 kg

Height : 60"

Physical: activity

O/H : P3Ao

M/H : Postmenopausal

C/H : None

Dietary History : V

Indication : Prolapse uterus

Operation : Hysterectomy

Any other : None

MRD No. : 11085

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	190	100	20	130	40	3.25
PO3	200	100	20	142	38	3.73
PO10	210	104	20.8	153.2	36	4.25

REMARKS

1. STC showed a rising trend in the levels. STG showed very minimal rise on 10th POD.
2. LDL showed a marked rise on 10th POD, HDL showed downward trend. LDL/HDL showed a rising trend.

Observation studied above shows that there was rise in STC and LDL levels with minimal fall in HDL levels after hysterectomy. As there is no change in hormonal milieu, other factors like stress etc. might be operating for this rise.

TABLE 13

Name : Bhagwati

Age : 50 years

Weight : 49 kg

Height : 61"

Physical activity : Mild

O/H : P4Ao

M/H : Postmenopausal

C/H : IUCD

Dietary habit : V

Indication : Prolapse uterus

Operation : Hysterectomy

Any other : None

MRD No. : 10812

Address:

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	200	80	16	146	38	3.84
PO3	180	72	14.4	127.6	38	3.35
PO10	186	96	19.2	131.8	35	3.76

REMARKS

1. There was a fall on 3rd POD in STC levels with slight rise on 10th POD, but levels were below than the basal value.
2. There was rise in STG levels.
3. LDL showed a fall on 3rd POD with rise on 10th POD.
4. HDL showed minimal fall with minimal variation in LDL/HDL ratio.

Observations studied above shows that levels of STC and LDL could not approached to basal level after fall on 3rd POD. This fall could be suggested by poor dietary intake. No variation in lipoprotein levels may be attributed to no hormonal deficiency after hysterectomy only.

TABLE 14

Name : Kaushalya

Age : 30 years

Weight: 45 kg

Height: 61"

Physical : Mild activity

O/H : P4Ao

M/H : Premenopausal

C/H : IUCD

Dietary habit : V

Indication : Prolapse uterus

Operation : Hysterectomy

Any other : None

MRD No. : 11299

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	150	80	16	99	35	2.8
PO3	130	84	16.8	81.2	32	2.5
PO10	200	96	19.2	150.8	30	5.0

REMARKS

1. There was marked rise of 50 mg% in STC level on 10th POD in comparison to basal levels.
2. STG showed a rising trend. There was drastic rise of 50 mg% in LDL levels on 10th POD in comparison to basal levels. There was minimal variation in HDL levels.
3. There was unfavourable swing on 10th day.

From above observations rise in STC, STG and LDL levels after hysterectomy only, could not be explained on hormonal basis. Other factors might be operating.

TABLE 15

Name : Heerabai

Age : 40 years

Weight: 43 kg

Height: 60"

Physical activity :

O/H : P4A1

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication : FUB

Operation : Hysterectomy

Any other : None

MRD No. : 16290

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	140	96	19.2	64.8	56	1.15
PO3	120	80	16	51	53	0.9
PO10	136	89	17.8	65.2	53	1.23

REMARKS

1. STC showed minimal variation in its levels on 10th POD in comparison to basal levels.
   STG showed similar trend.
2. LDL levels were largely constant after operation with almost no variation in HDL levels.

Observations studied above indicates that levels of lipoprotein remained as such after hysterectomy only. It could be suggested due to no change in hormonal milieu.

TABLE 16

Name : Kesar

Age : 45 years

Weight: 45 kg

Height: 61"

Physical activity : Mild

O/H : P6Ao

M/H : Postmenopausal

C/H : None

Dietary habit : V

Indication : Bad Cx

Operation : Hysterectomy

Any other : None

MRD No. : 16299

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	250	86	17.2	192.8	40	4.82
PO3	196	70	14	143.8	38	3.78
PO10	210	82	16.4	161.6	32	5.05

REMARKS

1. STC showed a fall on 3rd POD in its levels with rise on 10th POD but the levels were quite low than the basal value. Similar trend was present in STG levels.
2. There was marked fall in LDL levels on 3rd POD with rise on 10th POD. There was fall in HDL levels. LDL/HDL ratio showed unfavourable progression.

From above observations fall in all the lipoproteins might be suggested due to fasting state of patient after operation.

TABLE 17

Name : Usha Verma

Age : 30 years

Weight: 45 kg

Height: 61"

Physical : Mild activity

O/H : P3Ao

M/H : Premenopausal

C/H : IUCD

Dietary habit : V

Indication : TO mass

Operation : Hysterectomy

Any other :

MRD No. : 13705

Address : W/o S.S. Verma
Pathoria
Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
o day	160	82	16.4	96.6	47	2.05
PO3	150	70	14	90	46	1.95
PO10	176	96	19.2	115.8	41	2.82

REMARKS

1. STC showed a fall on 3rd POD and with rise on 10th POD in its level. STG showed similar trend.
2. There was marked rise in LDL levels on 10th POD with minimal fall in HDL levels.

Observations studied above show rising levels of STC and LDL after hysterectomy which may be due to other factors other than the hormonal change.

TABLE 18

Name : Sukha Devi

Age : 50 years

Weight: 49 kg.

Height: 62"

Physical : Mild activity

M/H : Postmenpausal

O/H : P2Ao

C/H : IUCD

Dietary habit : V

Indication : Prolapse uterus

Operation : Hysterectomy

Any other : None

MRD No. : 14565

Address : W/o Late sri Ghan Shyam Nakipur, Jalaun

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	200	80	16	146	38	3.84
PO3	150	60	12	100	38	2.63
PO10	160	130	26	99	35	2.82

REMARKS

1. STC showed a marked fall on 3rd POD with slight rise on 10th POD. There was significant rise in STC levels.
2. There was fall in LDL levels with minimal fall in HDL levels.
3. There was favourable fall in LDL/HDL ratio.

Observations studied above show that there is fall in STC, STG and LDL levels. Which might be suggested due to relatively fasting state of patient after operation.

TABLE 19

Name : Ramkali

Age : 60 years

Weight: 50 kg

Height: 59"

Physical: Mild activity

O/H : P4Ao

M/H : Postmenopausal

C/H : None.

Dietary habit : V

Indication : Prolapse uterus

Operation : Hysterectomy

Any other : None

MRD No. : 13445

Address: Jhariapura
Near Manuman Temple,
Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	266	81	16.2	212.8	37	5.75
PO3	200	65	13	150	37	4.05
PO10	217	146	29.2	156.8	31	5.05

REMARKS

1. There was fall on 3rd POD in STC levels with rise on 10th POD but the levels were quite lower than the basal levels.
2. There was marked rise in STG levels on 10th POD.
3. LDL levels showed a fall on 3rd POD with rise on 10th POD. LDL/HDL ratio was largely constant.

Observations studied show fall in STC, and LDL and which might be suggested due to poor dietary intake after operation. Rise in STG levels could not be explained due to hormonal change.

TABLE 20

Name : Khimiya
Age : 65 years
Weight: 45 kg
Height: 60"
Physical activity:Mild
O/H : P5Ao
M/H : Postmenopausal
C/H : None

Dietary habit : NV
Indication : FUB
Operation : Hysterectomy
Any other : None
MRD No. : 1687
Address : W/o Hamidhan
Pawa Shri Nagar,
Hameerpur.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	150	72	14.4	93.6	52	1.78
PO3	132	60	12.0	75	45	1.66
PO10	140	67	13.4	81.6	45	1.81

REMARKS

1. There was fall in STC levels on 3rd POD with rise on 10th POD. STG showed similar trend.
2. LDL showed a fall on 3rd POD in its levels with rise on 10th POD.
3. HDL showed minimal variation. LDL/HDL ratio showed no significant variation.

Observations studied above indicate that there was no rise in STC, LDL levels and fall in HDL which could be suggested due to no hormonal loss after hysterectomy only. Fall on 3rd POD could be explained due to fasting state of patient.

TABLE 21

Name : Rajkumari
Age : 45 years
Weight: 45 kg
Height: 60"
Physical activity: Mod.
O/H : P3Ao
M/H : Premenopausal
C/H : Ligation

Dietary habit : V
Indication : Bad Cx
Operation: Hysterectomy with unilateral oopherectomy
Any other: Taken hormones
MRD No. : 1619
Address: W/o Dalsukha Vokhar, Rath Hameerpur

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	250	80	16.0	194	40	4.85
PO3	240	86	17.2	182.8	40	4.57
PO10	280	130	26.0	217	37	5.86

REMARKS

1. There was marked rise in STC levels on 10th POD with minimal fall on 3rd POD.
2. There was marked rise in STG levels on 10th POD.
3. There was marked rise in STG levels on 10th POD.
4. There was insignificant fall in HDL levels with unfavourable rise in LDL/HDL ratio.

Observations studied above indicate that STC STG and LDL levels rise after oopherectomy, however, there was no comparable change in HDL but ratio had unfavourable swing after hormonal deficiency.

TABLE 22

Name : Harbi

Age : 40 years

Weight: 40 kg

Height: 60"

Physical : Mild activity

O/H : P4A2

M/H : Premenopausal

C/H : None

Dietary habit : NV

Indication : Prolapse uterus

Operation : Hysterectomy with unilateral oopherectomy

Any other : None

MRD No. : 611

Address : W/o Halku Power house Jhansi

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	157	63	12.6	113.4	31	3.65
PO3	150	69	13.8	108.2	28	3.86
PO10	200	103	20.6	159.4	20	7.97

REMARKS

1. STC showed slight fall in its level on 3rd POD with marked rise on 10th POD. STG showed marked rise on 10th POD.
2. There was slight fall in the levels of LDL on 3rd POD with drastic rise of about 50 mg% on 10th POD.
3. HDL showed downward trend. There was marked rise in LDL/HDL ratio on 10th POD.

Observations studied above indicate that STC, LDL and STG rise after oopherectomy with fall in HDL. These changes occur maximally near 2 weeks after operation. There was unfavourable swing in LDL/HDL ratio, thus makes the individual to have high risk.

TABLE 23

Name : Laxmi Devi

Age : 35 years

Weight: 42 kg

Height: 62"

Physical activity : Mild

O/H : P3A2

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication : FUB

Operation : Hysterectomy with unilateral oopherectomy.

Any other : None

MRD No. : 12200

Address: W/o Govind Das Akhadapur, Moth, Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	153	98	19.6	90.4	42	2.15
PO3	150	93	18.6	89.4	42	2.12
PO10	157	100	20.0	97.0	40	2.42

REMARKS

1. STC showed slight rise in its levels on 10th POD with minimal rise in STG levels.
2. There was rise in LDL levels with minimal variation HDL levels. There was slight rise in LDL/HDL ratio.

Observations studied above indicate that there is minimal variation in lipoprotein levels after oopherectomy. It could be suggested by hyperoestrogenemia/ hormonal imbalance.

TABLE 24

Name : Ram Murti

Age : 40 years

Weight : 50 kg

Height : 60"

Physical activity : Moderate

O/H : P4Ao

M/H : Premenopausal

C/H : IUCD

Dietary habit : V

Indication : FUB

Operation : Hysterectomy with unilateral oopherectomy

Any other : None

MRD No. : 11617

Day of Sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	200	103	20.6	132.4	47	2.81
PO3	200	100	20.0	133.0	47	2.82
PO10	210	97	19.4	145.6	45	3.23

REMARKS

1. STC showed rise in its levels on 10th POD. There was slight variation in STG levels.
2. LDL showed a rise in LDL levels and levels of HDL were largely constant. There was unfavourable progression in LDL/HDL ratio.

Observations studied above shows that levels of STC, LDL rise after oopherectomy with slight or no change in HDL levels. Thus ratio of LDL/HDL was mainly affected by oopherectomy.

TABLE 25

Name : Avadh

Age : 35 years

Weight : 48 kg

Height : 62"

Physical activity : Mild

O/H : P4Ao

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication : Bad Cx

Operation : Hysterectomy with unilateral oopherectomy

Any other : None

MRD No : 16299

Address : W/o Dhani Ram
Talbehat
Lalitpur

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	250	50	11.4	194.6	44	4.40
PO3	230	47	9.4	180.6	40	4.51
PO10	283	154	30.8	215.2	37	5.81

REMARKS

1. There was marked rise in STC levels on 10th POD . with similar trend in STG levels.
2. There was rise in LDL levels with slight fall in HDL levels. There was unfavourable progression in LDL/HDL ratio.

Observations studied above show that STC, STG and LDL levels rose while HDL levels fell after hormonal deficiency.

TABLE 26

Name : Urmila

Age : 36 years

Weight : 45 kg

Height : 62"

Physical activity :

O/H : P3Ao

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication : Prolapse uterus

Operation: Hysterectomy with unilateral oopherectomy

Any other : None

MRD No. : 16815

Address : W/o Daya Ram Taliya Mohalla, Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	150	57	11.4	107.6	31	3.47
PO3	145	50	10.0	107.0	28	3.82
PO10	217	146	29.2	168.8	19	8.88

REMARKS

1. There was marked rise in STC levels on 10th POD with small fall on 3rd POD. Similar trend was present in STG.
2. There was rise in LDL levels with fall in HDL levels.
3. There was unfavourable swing in LDL/HDL ratio.

Observations studied above indicate that there was marked rise on STC, STG and LDL levels with fall in HDL levels. Thus hormonal deficiency makes an individual at high risk.

TABLE 27

Name : Jagrani

Age : 48 years

Weight : 48 kg

Height : 61"

Physical : Mild

O/H : P3Ao

M/H : Premenopausal

C/H : None.

Dietary habit : V

Indication: PID with prolapse

Operation: Hysterectomy with unilateral oopherectomy

Any other : None

MRD No. : 14601

Address: W/o Prahalad
Chiar Thana
Hamirpur

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	167	63	12.6	107.4	47	2.28
PO3	153	54	10.8	100.2	42	2.38
PO10	213	133	26.6	149.4	37	4.03

REMARKS

1. STC showed a marked rise in its levels on 10th POD. STG showed similar trend
2. LDL showed a marked rise of about 40 mg% in its levels on 10th POD. HDL showed a downward trend.
3. There was unfavourable swing in LDL/HDL ratio.

Observations studied above indicate that levels of STC, LDL and STG rose while that of HDL fell. Ratio of LDL/HDL also rose after oopherectomy.

TABLE 28

Name : Brij Kumari

Age : 45 years

Weight : 49 kg

Height : 61"

Physical activity : Mild

O/H : P8Ao

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication : Solid ovarian tumor

Operation : Hysterectomy with unilateral oopherectomy

Any other : None

MRD No. : 2023

ADDRESS: Orchha, Teekamgarh

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	144	98	19.6	77.4	47	1.65
PO3	140	96	19.2	75.8	45	1.68
PO10	156	110	22.0	96.0	38	2.52
1 m	150	106	21.2	88.4	40	2.21

REMARKS

1. STC showed a fall on 3rd POD with rise on 10th POD in its levels on 1 montn there was fall but levels were still higher than the basal value. Same trend was present in STG.
2. LDL also showed similar rise and there was falling trend in HDL.

Observations studied above indicate that levels of STC, STG and LDL rose after operation, but maximum change occurred in 1st two weeks. Further course could be known only with further follow up.

TABLE 29

Name : Janki

Age : 37 years

Weight : 49 kg

Height : 61"

Physical : Mild activity

O/H : P4Ao

M/H : Premenopausal

C/H : Ligation

Indication : FUB

Dietary habit : V

Operation: Hysterectomy with unilateral oopherectomy

Any other: None

MRD No. : 1224

Address : W/o Har Dayal Bhasnera Gursarain Jhansi

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	140	104	20.8	63.2	56	1.10
PO3	136	100	20.0	63.0	53	1.18
PO10	140	98	19.6	67.4	53	1.26
1 m	140	110	22.0	68.0	50	1.36

REMARKS

- STC showed largely constant levels with almost minimal rise in LDL levels, with minimal fall in HDL levels after oopherectomy.

Observations studied above indicate that basal levels of STC are low in comparison to other patients. and there is no variation in STC, LDL and HDL levels. It could be suggested due to hormonal imbalance probably hyper oestrogenemia.

TABLE 30

Name : Kapoori

Age : 40 years

Weight : 50 kg

Height : 60"

Physical : Mild activity

O/H : P2Ao

M/H : Premenopausal

C/H : Ligation

Dietary habit : V

Indication : FUB

Operation: Hysterectomy with unilateral oopherectomy

Any other : None

MRD No. : 1223

Address : W/o Raja Ram Madarbara, Garotha, Jhansi

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	145	110	22.0	67.0	56	1.19
PO3	142	100	20.0	72.0	50	1.44
PO10	146	112	22.4	75.6	48	1.57
1 m	152	112	22.4	81.6	48	1.70

REMARKS

1. STC showed rise in its level on 10th POD with almost no change in STG levels.
2. There was marked rise in LDL levels on 10th POD with fall in HDL levels.
3. There was unfavourable progression in LDL/HDL ratio.

Observations studied above indicate that STC LDL levels rise after operation while HDL levels fell after oopherectomy.

TABLE 31

Name : Parwati

Age : 36 years

Weight : 55 kg

Height : 62"

Physical activity : Mild

O/H : P3

M/H : Premenopausal

C/H : Ligation

Dietary habit : V

Indication : Bad Cx

Operation : Hysterectomy with bilateral oopherectomy

Any other : None

MRD No. : 13885

Address : W/o Hajari Lal Kurvai, Vidisha

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/HDL
0 day	166	67	13.4	99.6	53	1.87
PO3	150	50	10.0	93.00	47	1.9
PO10	204	83	16.6	156.4	31	5.0

REMARKS

1. STC showed a fall in its fasting value on 3rd POD and marked rise on 10th POD. STG showed same trend.
2. There was drastic rise in LDL levels on 10th POD of about 50 mg% from its basal value, while HDL showed a falling trend, which was not marked in comparison to LDL.
3. There was drastic rise in LDL/HDL ratio.

The observations studied above show that levels of STC, STG and LDL rise after bilateral oopherectomy while of HDL fall , and ovarian hormones affect LDL more than the HDL which could be concluded by unfavourable rise of LDL/HDL ratio.

TABLE 32

Name : Ramwati
Age : 45 years
Weight : 46 kg
Height : 62"
Physical activity : Mild
O/H : P4Ao
M/H : Premenopausal
C/H : None

Dietary habit : V
Indication : Fibroid uterus
Operation : Hysterectomy with bilateral oopherectomy
Any other : Taken hormones
MRD No. : 14704
Address : W/o Ram Narain Pitakpur, Rajpur Kanpur

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	176	96	19.2	117.0	49	2.38
PO3	160	80	16.0	108.0	36	3.00
PO1O	210	118	23.6	156.4	30	5.21
1 m	2O5	118	23.6	151.4	30	5.04

REMARKS

1. STC showed slight fall on 3rd POD and marked rise UPTO 50 mg% on 10th POD. After one month there was minimal rise. STG showed same trend.
2. There was marked rise in LDL level on 10th POD with minimal variation on 1 month.
3. HDL showed a decreasing trend upto 10th POD levels remained constant after 1 month.
4. Ratio of LDL/HDL almost doubled up on 10th POD while later on remained same.

All the above observations reveal that after oopherectomy STC, STG and LDL rise and HDL fall. Oestrogen has greater impact on LDL than the HDL and more change in ratio than the absolute levels.

TABLE 33

Name : Anisha
Age : 36 years
Weight : 45 kg
Height : 61"
Physical activity : Moderate
O/H : P5A1
M/H : Premenopausal
C/H : None

Dietary habit : NV
Indication : Fibroid uterus
Operation : Hysterectomy with bilateral oopherectomy
Any other: None
MRD No. : 14608
Address : W/o Gafoor khan 153, Chaturyana Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	200	100	20.0	141.0	39	3.6
PO3	170	76	15.2	115.8	39	2.96
PO10	230	130	26.0	173.0	31	5.58
1 m	235	128	25.6	1 81.4	28	6.47

REMARKS

1. STC showed fall on 3rd POD and marked rise on 10th POD. There was insignificant variation after 1 month.
2. STC showed similar trend.
3. There was marked rise in LDL level on 10th POD with further rise on 1 month.
4. HDL showed a downward trend, and there was a rise in LDL/HDL ratio.

Observations studied above give the conclusion that ostrogen deficiency causes marked rise in STC, LDL and STG within first two weeks after operation later on levels started stabilizing and deficiency causes more change in ratio than the absolute values of lipoproteins. Similar conclusion was drawn in previous patient.

TABLE 34

Name : Savitri

Age : 30 years

Weight : 40 kg

Height : 61"

Physical activity : Moderate

O/H : P3Ao

M/H : Premenopausal

C/H : Ligation

Dietary habit : V

Indication : Bad Cx

Operation : Hysterectomy with bilateral oopherectomy

Any other : None

MRD No. : 12322

Address : W/o Dharmendra MauRanipur, Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	166	67	13.4	104.6	48	2.17
PO3	150	53	10.6	93.6	46	2.03
PO10	200	83	16.6	135.4	48	2.82

REMARKS

1. There was marked rise in STC levels on 10th POD
2 with slight fall on 3rd POD. STG showed similar trend.
2. LDL showed rise from its basal value while there was no change in HDL levels.
3. There was slight rise in LDL/HDL ratio.

Observations studied reveal that after bilateral oopherectomy absolute levels of STC, STG and LDL rose while it did not affect levels significantly. However, ratio of LDL/HDL rose slightly.

TABLE 35

Name : Devki

Age : 48 years

Weight : 48 kg

Height : 62"

Physical activity : Mild

O/H : P2Ao

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication : Fibroid uterus

Operation : Hysterectomy with bilateral oopherectomy

Any other : Taken hormones for short period

MRD No. : 11649

Address : W/o Ramsewak Garotha, Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	166	150	30.0	98.0	38	2.5
PO3	183	167	33.4	111.6	38	2.9
PO10	200	168	33.6	130.4	36	3.6

REMARKS

1. It is evident from table that there was significant rise in STC at 10th day in comparison to basal value.
2. STG showed a rising trend and LDL showed a marked rise on 10th day from the basal value.
3. There was minimal variation in HDL level but rise in ratio of LDL/HDL was unfavourable.

Observations reveal that after bilateral oopherectomy hormonal deficiency leads to rise in STC, STG and LDL levels while HDL values remained constant. However, it changed ratio LDL/HDL towards unfavourable side.

TABLE 36

Name : Asha

Age : 35 years

Weight : 42 kg

Height : 59"

Physical activity : Mild

O/H : P3Ao

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication : FUB

Operation : Hysterectomy with bilateral oopherectomy

Any other : None

MRD No. : 12323

Address : W/o Satish Baragaon, Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	200	103	20.6	132.4	47	2.81
PO3	180	100	20	113	47	2.40
PO10	200	97	19.4	136	45	3.02

REMARKS

1. STC levels remained constant on 10th POD with slight fall on 3rd POD.
2. There was small fall in STG levels with slight rise in LDL levels.
3. HDL levels remaind largely constant however LDL/HDL ratio rose.

Observations studied reveal that fall in STC level on 3rd POD could be explained due to fasting state of patient and input of the fluids upto 3 days, while no significant change in lipid levels might be due to hormonal imbalance at the time of operation which was the indication of surgery.

TABLE 37

Name : Kapoori
Age : 42 years
Weight : 43 kg
Physical activity :
O/H : P2Ao
M/H : Premenopausal
C/H : None
Height : 61"

Dietary habit : V
Indication : FUB
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 12321
Address : W/o Halku Near cotton Mill Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	183	100	20.0	126	37	3.40
PO3	160	90	18.0	106	36	2.94
PO10	166	93	18.6	107.4	40	2.60

REMARKS

1. STC showed a fall on 3rd POD with minimal rise on 10th POD. STG also showed a similar trend.
2. There was fall in LDL level with insignificant rise in HDL level.
3. LDL/HDL ratio showed a falling trend.

Observations made from above study reveal that functional uterine bleeding (FUB), which was the indication of surgery might be causing severe hormonal imbalance which had been raised all the lipid fractions while decreased HDL. After removal of ovaries factor had been removed and there was fall in STC, STG and LDL while rise in HDL, which is favourable to patient.

TABLE 38

Name : Jamuna
Age : 45 years
Weight : 46 kg
Height : 60"
Physical activity : Moderate
O/H : P5Ao
M/H : Premenopausal
C/H : None

Dietary habit : V
Indication : FUB
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 11980
Address : W/o Devi Das Cantt. Babina Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	183	96	19.2	129.8	34	3.8
PO3	160	78	15.6	108.4	36	3.01
PO10	170	93	18.6	114.4	37	3.09

REMARKS

1. STC showed a marked fall on 3rd POD. Levels rose again on 10th POD but remained below basal value STG showed a similar trend.
2. LDL showed a significant fall on 3rd POD with rise on 10th POD but remained below basal value.

- There was rising trend in HDL levels while favourable fall in LDL/HDL ratio.

Observations studied above give the similar conclusion as in former patient that hormonal imbalance was causing deleterious effect while removal of ovaries attributed to low STC, STG and LDL levels.

TABLE 39

Name : Khillan
Age : 48 years
Weight : 50 kg
Height : 63"
Physical activity : Mild
O/H : P6Ao
M/H : Premenopausal
C/H : Ligation

Dietary habit : V
Indication: Uterine polyp
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 12519
Address: W/o Jagmohan Tomar Amra, Moth Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	167	92	18.4	98.6	50	1.97
PO3	160	80	16.0	105.0	39	2.69
PO10	250	123	24.6	193.6	32	6.05

REMARKS

1. STC showed a marked rise of about 90 mg% on 10th POD from its basal value.
2. STG also showed drastic rise on 10th POD.
3. LDL showed a marked rise of 100 mg% on 10th POD from its basal value while there was significant fall in HDL levels.

Observations reveal that there was marked rise in absolute value of STC, STG and LDL after bilateral oopherectomy and rise of LDL level more than 170 mg% and ratio of LDL/HDL more than 6 make the individual to have high risk thus female hormones might have suggested protective function.

TABLE 40

Name : Shantibai
Age : 45 years
Weight : 45 kg
Height : 62"
Physical activity : Mild
O/H : P3A2
M/H : Premenopausal
C/H : None

Dietary habit : V
Indication: Prolapse uterus
Operation: Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 11948
Address : W/o Arjun Lahchura, Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	160	103	20.6	85.4	54	1.58
PO3	146	90	18	83	45	1.84
PO10	215	130	26	153	36	4.25

REMARKS

1. STC showed a marked rise of 55 mg% on 10th POD from its basal values. Small fall on 3rd POD could be explained due to fasting state of patient. STG showed similar trend.
2. There was drastic rise in LDL levels on 10th POD of about 70%.
3. There was significant fall in HDL levels with unfavourable progression in ratio of LDL/HDL.

Observations studied above show that levels of STC, STG and LDL rose while HDL fell after bilateral oopherectomy. Change occurred maximum in LDL in comparison to HDL which led to unfavourable swing in LDL/HDL ratio.

TABLE 41

Name : Lajwanti

Age : 35 years

Weight : 45 kg

Height : 61"

Physical activity : Mild

O/H : P4Ao

M/H : Premenopausal

C/H : Ligation

Dietary habit : V

Indication : FUB

Operation : Hysterectomy with bilateral oopherectomy

Any other : None

MRD No. : 1638

Address : W/o Kishore M.L.B.Med. Coll. Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	135	71	14.2	78.8	42	1.87
PO3	130	76	15.2	76.8	38	2.02
PO10	135	84	16.8	82.2	36	2.28
1 m	150	88	17.6	96.4	36	2.67

REMARKS

1. It is evident from table that STC remained largely constant after 10th day but rise in STC level in one month.
2. There was rising trend in STG and LDL levels, while downward trend in HDL.
3. There was rise in LDL/HDL ratio of modest risk.

Observations made from above reveal that patient had very low basal STC levels because of her young age and rising trend in STC and LDL was seen maximum around 1 month.

TABLE 42

Name : Lali
Age : 50 years
Weight : 42 kg
Height : 59"
Physical : Mild activity
O/H : P4Ao
M/H : Premenopausal
C/H : None

Dietary habit : NV
Indication : Uterus polyp
Operation: Hysterectomy with bilateral oopherectomy.
Any other: None
MRD No. : 213
Address: W/o Badali
Bapul Tamri
Baragaon, Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	137	70	14.0	73	50	1.46
PO3	130	65	13.0	75	42.	1.78
PO10	150	76	15.2	96.8	38	2.54
1 m	156	78	15.6	102.4	38	2.69

REMARKS

1. Study showed a rising trend in STC levels which was maximum around 10th day. STC showed similar trend.
2. There was rising trend in LDL levels which was not marked and fall in HDL levels upto 10th day. Levels remained constant at one month.
3. There was small rise in LDL/HDL ratio also.

Observations studied above show that change in lipoprotein levels are not so drastic as in young patients while trend remained similar. It could be explained because ovaries get fatigued near menopause. Thus after surgery there did not occur marked change in hormonal milieu.

TABLE 43

Name : Shribai
Age : 45 years
Weight : 49 kg
Height : 61"
Physical: Mild activity
O/H : P4Ao
M/H : Premenopausal
C/H : None

Dietary habit : V
Indication: FUB
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 1762
Address : W/o Parmanand Lalitpur

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	177	136	27.2	100.8	49	2.05
PO3	180	140	28.0	107.0	45	2.37
PO10	213	169	33.8	140.2	39	3.59
1 m	213	150	30.0	145.0	38	3.81

REMARKS

1. STC showed a rising trend with maximum rise on 10th day later on level became constant at 1 month.
2. There was rising trend in STG levels upto 10th day then levels started falling but remained higher than the basal at 1 month.
3. There was drastic rise in LDL level near 10th day with small rise at 1 month.
4. There was downward trend in HDL levels. The maximum fall was upto 10th day. There was unfavourable progression in LDL/HDL ratio.

Observations studied above reveal that levels of STC, STG and LDL rose and HDL levels fell. Maximum change occurred near 10th day, later on levels started settling.

TABLE 44

Name : Shyama Bai
Age : 45 years
Weight : 43 kg
Height : 62"
Physical: Mild-moderate activity
O/H : P5Ao
M/H : Premenopausal
C/H : None

Dietary habit : V
Indication : Prolapse Uterus
Operation: Hysterectomy with bilateral oopherectomy
Any other: None
MRD No. : 1779
Address : W/o Nathu Ram Lalitpur

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	197	105	21.0	119	57	2.08
PO3	190	100	20.0	116	54	2.14
PO10	192	192	20.4	121.6	50	2.43
1 m	220	120	24.0	146.0	50	2.92

REMARKS

1. There was slight fall in STC levels. There was marked rise near 1 month. STG showed similar trend.
2. LDL showed maximum rise near 10th day and 1 month after operation.
3. HDL showed a small fall upto the 10th day, later on levels remained constant. There was unfavourable progression in LDL/HDL ratio.

Observations studied above show that levels of STC, STG and LDL rose after operation and that of HDL fell. Changes occurred maximum between 1-4 weeks after operation.

TABLE 45

Name : Gomti

Age : 45 years

Weight : 45 kg

Height : 62"

Physical: Moderate activity

O/H : P5A1

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication: Suspicious cal.

Operation : Hysterectomy with bilateral oopherectomy

Any other : Tobacco chewer

MRD No. : 246

Address : W/o Gopi Chand Jariai, Chirgaon Jhansi.

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	154	90	18.0	96.0	40	2.4
PO3	140	96	19.2	85.8	35	2.45
PO10	180	100	20.0	128.0	32	4.00
1 m	200	120	24.0	148.0	28	5.25

REMARKS

1. STC showed drastic rise in its absolute levels. Same trend was found in STG levels.
2. There was marked rise of about 50 mg% in absolute value of LDL from the basal value near 1 month.
3. Hdl showed a downward trend. There was marked rise in LDL/HDL ratio after operation.

Observations studied above show that after bilateral oopherectomy more changes occurred in LDL in comparison to HDL. Thus ratio of LDL/HDL was unfavourable swing. This makes the individual to have high risk.

TABLE 46

Name : Munni Jain
Age : 40 years
Weight: 50 kg
Height: 61"
Physical: Mild activity
O/H : P4Ao
M/H : Premenopausal
C/H : None

Dietary habit : V
Indication: FUB
Operation: Hysterectomy with bilateral oopherectomy
Any other: Obese
MRD No. : 230
Address : W/o Rajendra Jain
Kamharpur
Jalaun

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	214	98	19.6	140.4	54	2.6
PO3	200	100	20	130	50	2.6
PO10	238	120	24	166	48	3.4
1 m	250	125	25	177	48	3.6

REMARKS

1. There was marked rise in STC levels after operation with similar trend in STG.
2. There was drastic rise in LDL levels at 10th POD with further rise at 1 month.
3. There was a falling trend of HDL.At 1 month levels of HDL were largely constant. There was unfavoura ble progression in LDL/HDL ratio.

Observations studied above indicate that after oopherectomy levels of STC, STG and LDL rose while that of HDL fell. Hormones deficiency had greater impact on LDL levels than HDL.

TABLE 47

Name : Kanti devi

Age : 35 years

Weight: 45 kg

Height: 60"

Physical: Mild activity

O/H : P4Ao

M/H : Premenopausal

C/H : None

Dietary habit : V

Indication: Chronic cervicitis

Operation : Hysterectomy with bilateral oopherectomy

Any other : None

MRD No. : 22942

Address : W/o Jagdish Pd. Bhadewara Kunj Jalaun

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	208	130	26.0	125.0	57	2.19
PO3	200	137	27.4	116.6	56	2.08
PO10	230	150	30.0	145.0	45	3.22
1 m	236	158	31.6	161.4	43	3.75

REMARKS

1. There was marked rise in STC levels at 10th POD with slight rise on 1 month. STG also showed similar trend.
2. There was marked rise in LDL levels and downward in HDL levels. LDL/HDL ratio showed unfavourable progression.

Observations studied above show similar conclusion that after operation STC, STG and LDL levels rose and HDL levels fell. This change occurred maximum near 10th day.

TABLE 48

Name : Gaura
Age : 45 years
Weight : 38 kg
Height : 60"
Physical: Mild activity
O/H : P5Ao
M/H : Premenopausal
C/H : Ligation

Dietary habit : V
Indication: Cervical fibroid
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 9873
Address: W/o Harcharan
Peepal Khera
Shivpuri

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	183	90	18.0	130.0	35	3.71
PO3	167	76	15.2	117.8	34	3.46
PO10	250	110	22.0	197.0	31	6.35

REMARKS

1. STC showed a fall on 3rd POD with drastic rise on 10th POD in its levels. STG showed similar trend.
2. LDL showed a drastic rise on 10th POD with small fall in 3rd POD.
3. There was insignificant fall in HDL levels continuously after operation. There was marked sweing in LDL/HDL ratio at 10th POD.

Observations studied above show that marked rise occurred in STC, STG and LDL levels while small fall in HDL levels. LDL/HDL ratio had unfavourable swing thus made the individual to have high risk after oopherectomy.

TABLE 49

Name : Rambai
Age : 50 years
Weight : 46 kg
Height : 63"
Physical activity : Mild
O/H : P4Ao
M/H : Postmenopausal
C/H : None

Dietary habit : V
Indication: Prolapse uterus
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 12026
Address: W/o Gulab Singh Hamirpur

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	166	96	19.2	106.8	40	2.67
PO3	150	110	22	90.0	38	2.36
PO10	172	110	22	105.0	45	2.33

REMARKS

1. STC showed a fall in its levels at 3rd POD with rise on 10th POD which was insignificant in comparison to basal value.
2. There was small rise in STG levels at 3rd POD. Levels were constant on 10th POD.
3. LDL levels were largely constant on 10th POD in comparison to basal levels. HDL showed small rise in HDL levels. There was minimum variation in LDL/HDL ratio.

Observations studied above show that after bilateral oopherectomy in post menopausal patient there was no marked change in lipoprotein levels. Thus ovarian hormones may be attributed to lipid changes which were already exhausted in this subject.

TABLE 50

Name : Siya Rani
Age : 50 years
Weight : 40 kg
Height : 61"
Physical activity : Mild
O/H : P5Ao
M/H : Postmenopausal
C/H : None

Dietary habit : V
Indication: Calx.
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 1313
Address : W/o Nathu Ram Lalitpur

Day of sampling	STC	STG	VLDL	LDL	DHL	LDL/ HDL
0 day	137	100	20.0	58.0	59	0.9
PO3	140	108	21.6	61.4	57	1.07
PO10	146	108	21.6	72.4	52	1.39
1 m	140	110	22.0	63.0	55	1.25

REMARKS

1. STC showed a minimal rising trend after operation. STG levels also showed rising trend after 10th day.
2. LDL showed significant rise on 10th POD. Later on there was slight fall in levels near 1 month.
3. There was falling trend in HDL and rising trend in LDL/HDL ratio.

Observations studied show that there was insignificant rise in STC, LDL levels and fall in HDL levels. Thus ovarian hormones may be attributed to lipid changes which were already exhausted in this patient.

TABLE 51

Name : Kala
Age : 38 years
Weight : 46 kg
Height : 60"
Physical activity : Mild
O/H : P4
M/H : Premenopausal
C/H : None

Dietary habit : V
Indication: Prolapse uterus
Operation : Hysterectomy with bilateral oopheretomy
Any other : None
MRD No. : 16546
Address : W/o Bacchi, Datia

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	200	57	11.4	157.6	34	4.6
PO3	150	50	10.0	111.0	28	3.9
PO10	200	90	18.0	157.0	18	8.7

REMARKS

1. STC showed a fall in its basal value from 200 mg% to 150 mg% on 3rd POD but level again rose on 10th day approaching upto basal level.
2. STG showed a marked rise on 10th POD.
3. LDL showed no variation on 10th POD from its basal value, however, HDL showed a falling trend. LDL/HDL ratio was having an unfavourable swing.

Observations studied above show that after surgical menopause there was no variation in absolute values of STC and LDL, but fall in HDL level and unfavourable swing in LDL/HDL ratio. STG levels rose after oopherectomy. Fall in STC on 3rd POD could be explained due to fasting state of patient after operation.

TABLE 52

Name : Suman
Age : 45 years
Weight : 50 kg
Height : 62"
Physical activity : Mild
O/H : P3
M/H : Premenopausal
C/H : Ligation

Dietary habit : V
Indication: Fibroid uterus
Operation : Hysterectomy with bilateral oopherectomy
Any other : None
MRD No. : 16436
Address: W/o Parusottam

Day of sampling	STC	STG	VLDL	LDL	HDL	LDL/ HDL
0 day	167	57	11.4	117.6	38	3.07
PO3	149	57	11.4	110.0	28	3.92
PO10	136	90	18.0	96.0	22	4.30

REMARKS

1. STC showed a moderate fall on 3rd POD in its value. This fall was subsequently present in 10th POD.
2. There was marked rise in STG level on 10th POD.
3. LDL and HDL showed a downward trend while ratio between LDL and HDL rose upto significant risk.

From the above observations falling trend of STC, LDL after operation might suggest that there might be some factors in ovaries which were increasing the levels of STC, LDL and HDL before operation.

SUMMARY AND CONCLUSION

SUMMARY AND CONCLUSION

1. The effect of surgical menopause on lipoprotein levels and their time course were studied in 75 females.
2. In the present study 45 females of mean age 41.2±16 years (premenopausal - 36 and postmenopausal - 9) were studied who had been undergone hysterectomy(13), with unilateral oopherectomy (10), and bilateral oopherectomy (22). Indications were FUB (12), prolapse uterus (16), bad cervix (9), fibroid (6) and TO mass (2).
3. Overnight fasting serum lipoproteins (STC, LDL, HDL) and STG were measured on the day of operation, 3rd day, 10th day after operation.
4. There was a significant fall on 3rd day in all the lipoprotein fractions in all subjects. Maximum fall of 15% was observed in serum triglyceride levels. This appears to be due to parenteral fat free, low caloric feeding and post operative stress.
5. At 10th day, in premenopausal hysterectomy with bilateral oopherectomy STC, LDL and STG levels rose significantly and crossed the basal values; STC from 176-198 mg%, LDL from 118 to 139 mg%, STG from 103 to 111 mg%. HDL on the contrary fell from 45 to 35 mg%. Similar change of less magnitude was observed in premenopausal unilateral oopherectomy.

6. In postmenopausal females after hysterectomy alone or with oopherectomy a rise in serum lipoprotein was observed on the 10th day but was statistically insignificant from the basal value.
7. Ten patients were followed at one month. It was observed that 10th day and one month levels were not statistically significantly different.
8. Thirty females who were studied in previous year were followed up at 6 month. There was insignificant alteration in lipoproteins at one month and 6th month in all the subjects, however, LDL rose significantly in the 1st month in premenopausal bilateral oopherectomy, but levels at 1 month and 6 month were not statistically significantly different.

We suggest that assessment of lipoprotein profile before and after operation should be an integral part in every premenopausal women with unilateral or bilateral oopherectomy. If the induced changes become abnormal, they should be suitably managed.

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M A S T E R C H A R T

M A S T E R C H A R T

General characteristics of patients of group A.

Sl. No.	Name	Age (yrs)	Height (Inch)	Weight (kgs.)	Parity	Diagnosis	Hb (gm%)	Socio-economic status	Urine Alb./ Sug.	Dietary habit
GROUP A-Ia										
1.	Nirmal devi	38	63	53	P2Ao	Prolapse	11.8	Poor	Nil	Veg.
2.	Rajabai	30	63	55	P5Ao	Suspicious Cx	10.4	Middle	"	"
3.	Lata	35	61	50	P4Ao	Fibroud	10.2	Poor	"	"
4.	Sheela	35	61	51	P4Ao	FUB	10.0	Middle	"	"
5.	Kalpana	30	64	54	P3Ao	Adenomyosis	10.4	Poor	"	"
GROUP A-Ib										
1.	Vidya	45	61	51.5	P2Ao	FUB	9.8	Middle	"	"
2.	Asha	35	60	50	P4Ao	FUB	10.4	Middle	"	"
3.	Santosh	42	62	50	P4Ao	FUB	10.0	Middle	"	"
4.	Usha	42	63	54	P3A1	FUB	11.8	Middle	"	"
5.	Sunita	35	62	55	P6Ao	Bad Cervix	11.4	Poor	"	"
6.	Pushpa	36	62	52	P3A1	Fibroid	10.2	Middle	"	"
7.	Usha	30	61	51	P2Ao	Bad Cx	11.0	Middle	"	"
GROUP A-Ic										
1.	Phoola bai	40	60	50	P2A0	Fibroid	9.6	Poor	"	"
2.	Asha Rani	40	59	48	P2Ao	FUB	11.0	Middle	"	"
3.	Rajeshwari	45	60	49.5	P7Ao	FUB	11.2	Poor	"	"
4.	Vimla	42	58	45	P7Ao	Chr. cervicitis	11.4	Middle	"	"
5.	Nirmala	48	64	55	P3Ao	Suspicious Cx	12.6	Middle	"	"
6.	Ramkali	50	59	47	P6A3	FUB	11.6	Poor	"	veg.
7.	Umadevi	40	61	48	P5Ao	PID	10.2	Poor	"	Non veg.
8.	Neksi devi	38	57	45	P6Ao	FUB	10.2	Poor	"	Veg.
9.	Shanti	50	60	42	P5Ao	FUB	9.0	Poor	"	"
GROUP A-II										
1.	Ramkali	65	61	54	P3Ao	Prolapse	10.2	Middle	"	"
2.	Bhanumati	65	61	52	P5Ao	Prolapse	10.8	Poor	"	"
3.	Rajabeti	55	61	49	P6Ao	Prolapse	11.2	Poor	"	"
4.	Basanti	45	61	50	P5Ao	Fibroid	10.2	Middle	"	"
5.	Hamidan	67	61	49.6	P4Ao	Prolapse	11.2	Poor	"	Non veg.
6.	Wahidan	50	60	50	P4Ao	Prolapse	10.4	Poor	"	" "
7.	Rajkumari	50	49	48	P9Ao	Prolapse	10.8	Poor	"	"
8.	Shyambai	35	60	51	P3Ao	Prolapse	11.4	Poor	"	"
9.	Vimla	40	60	50	P3Ao	Prolapse	10.2	Middle	"	"

Levels of lipid lipoproteins of group A.

Sl. No.	STC						STG					
	0d	3d	10d	1 m	3 m	6 m	0 d	3 d	10d	1 m	3 m	6 m
GROUP A-Ia												
1.	180	177	175	182	178	180	100	98	98	102	104	102
2.	199	194	195	190	194	196	83	84	85	80	82	82
3.	169	161	170	175	161	162	94	92	76	100	97	96
4.	145	135	148	140	142	144	145	132	94	104	96	98
5.	210	206	212	208	208	208	99	97	95	100	102	100
GROUP A-Ib												
1.	176	170	174	180	174	178	94	90	90	92	96	96
2.	162	160	164	170	172	176	98	94	100	106	108	106
3.	160	158	162	166	176	170	78	76	76	80	86	82
4.	146	150	152	157	148	150	109	110	107	114	108	111
5.	153	151	156	160	154	165	93	92	90	96	94	96
6.	131	132	134	136	145	143	70	72	70	74	74	78
7.	214	190	200	204	200	219	180	165	172	180	176	182
GROUP A-Ic												
1.	131	130	131	142	140	138	86	80	78	92	90	92
2.	147	143	150	158	160	158	84	80	80	86	89	88
3.	155	152	156	164	169	166	98	96	102	104	108	102
4.	142	140	146	154	156	168	108	106	100	110	110	109
5.	144	142	147	152	150	154	116	114	118	120	114	116
6.	171	168	170	186	188	186	106	98	100	108	116	112
7.	196	190	194	208	216	216	110	106	108	112	118	116
8.	166	162	164	174	179	176	92	90	90	94	104	100
9.	131	130	131	142	134	142	76	80	78	92	90	86
GROUP A-II												
1.	162	160	164	161	158	160	99	100	96	102	106	102
2.	157	150	160	153	158	158	142	140	138	133	131	131
3.	159	154	156	160	158	162	87	90	91	92	84	86
4.	172	170	172	174	170	176	102	100	100	98	96	100
5.	151	150	154	148	152	152	120	100	118	117	114	118
6.	200	194	197	202	203	208	110	98	98	100	104	106
7.	153	150	155	157	159	155	96	98	98	102	102	100
8.	184	182	180	185	182	188	114	112	112	110	116	116
9.	154	150	155	156	153	158	110	108	108	106	112	114

Sl. No.	HDL						VLDL					
	0d	3d	10d	1m	3m	6m	0d	3d	10d	1m	3 m	6 m
GROUP A-Ia												
1.	50	48	47	50	49	48	20.0	19.6	19.6	20.4	20.8	20.4
2.	50	48	47	50	49	50	16.6	16.8	17.0	16.0	16.4	16.4
3.	72	70	68	67	65	66	18.8	18.4	19.2	20.0	19.4	19.2
4.	57	53	54	56	54	54	29.0	26.4	18.8	20.8	19.2	19.6
5.	40	37	40	38	39	42	19.8	19.4	19.0	20.0	20.4	20.0
GROUP A-Ib												
1.	60	58	57	62	60	56	16.8	16.0	16.0	16.4	17.2	19.2
2.	62	60	58	63	60	59	19.6	18.8	20.0	21.2	21.6	21.2
3.	44	42	45	43	40	39	14.0	15.2	15.2	16.0	17.2	16.4
4.	58	54	52	55	57	55	21.8	22.0	21.4	22.8	21.6	22.2
5.	46	42	43	45	47	45	18.6	14.4	18.0	19.2	18.8	19.2
6.	55	54	53	56	55	52	14.0	12.4	14.0	10.8	14.8	15.6
7.	74	67	70	64	65	63	36.0	33.0	32.4	36.0	35.2	36.4
GROUP A-Ic												
1.	37	34	43	44	42	35	17.2	16.0	15.6	18.4	18.0	18.4
2.	37	35	35	38	38	35	16.8	16.0	16.0	17.2	17.8	17.6
3.	60	58	57	60	56	52	17.6	19.2	20.4	20.8	21.8	20.4
4.	54	53	54	56	52	50	21.4	21.4	20.0	22.0	22.0	21.8
5.	37	40	40	42	39	35	23.2	22.8	23.6	24.0	22.8	23.8
6.	64	60	62	60	60	59	21.2	19.6	20.0	21.6	23.2	22.4
7.	70	68	68	70	66	65	22	21.2	21.6	22.2	23.6	23.2
8.	40	38	40	41	40	32	18.4	18.0	18.0	18.2	20.8	20.0
9.	37	34	43	44	42	35	15.2	16.0	15.6	18.4	18.0	17.2
GROUP A-II												
1.	57	52	54	52	55	55	19.8	20.0	19.2	20.4	21.2	20.4
2.	50	48	50	52	53	51	28.4	28.0	27.6	26.6	26.2	26.2
3.	72	70	70	68	71	70	17.4	18.0	18.2	18.4	14.2	17.2
4.	47	45	46	47	48	47	20.4	20.0	20.0	19.6	19.2	20.0
5.	70	68	67	71	65	65	14.0	13.2	23.4	23.4	22.8	23.8
6.	39	36	34	37	39	38	22.0	19.8	19.6	20.0	20.8	21.2
7.	46	45	45	47	46	45	19.2	19.6	19.6	20.0	20.4	20.0
8.	42	40	42	41	43	40	22.8	22.4	22.4	22.0	23.4	23.2
9.	38	37	37	40	36	36	22.0	21.6	21.6	21.2	21.4	22.8

Sl. No.	LDL						LDL/HDL					
	0d	3 d	10d	1 m	3 m	6 m	0d	3 d	10d	1 m	3 m	6 m
GROUP A-Ia												
1.	110.0	109.4	108.4	111.6	108.2	111.6	2.2	2.2	2.2	2.2	2.2	2.3
2.	132.4	129.2	131.0	124.0	128.6	129.6	2.6	2.6	2.6	2.4	2.6	2.6
3.	78.2	72.6	82.8	88.0	76.6	76.8	1.08	1.0	1.2	1.3	1.1	1.1
4.	59.0	55.6	62.2	75.2	64.8	70.8	1.0	1.0	1.1	1.3	1.2	1.3
5.	150.2	149.6	145.0	154.0	148.6	145.6	3.1	4.0	3.6	4.0	2.7	3.4
GROUP A-Ib												
1.	99.2	96.0	101.0	101.6	96.8	102.8	1.6	1.6	1.2	1.6	1.6	1.8
2.	80.4	8.12	86.0	85.6	90.8	95.8	1.2	1.2	1.4	1.3	1.6	1.6
3.	102.0	100.8	101.8	107.0	118.8	114.6	2.3	2.3	2.2	2.4	2.9	2.9
4.	66.2	74.0	78.6	79.2	69.4	72.8	1.14	1.3	1.7	1.4	1.2	1.3
5.	90.4	94.6	95.0	95.8	88.2	100.8	1.9	2.2	2.3	2.1	1.8	2.2
6.	62.0	65.6	67.0	69.2	75.2	75.8	1.1	1.2	1.2	1.2	1.3	1.4
7.	104.0	90.0	97.6	100.0	99.8	119.8	1.4	1.3	1.3	1.5	1.5	1.9
GROUP A-Ic												
1.	76.8	80.0	72.4	79.6	80.0	84.6	2.1	2.3	1.6	1.8	1.9	2.4
2.	93.2	92.0	99.0	102.8	104.2	105.4	2.5	2.6	2.8	2.7	2.7	3.0
3.	77.4	74.8	78.6	83.2	91.2	93.6	1.29	1.2	1.3	1.3	1.5	1.8
4.	66.6	65.8	72.0	76.0	82.0	96.2	1.23	1.1	1.2	1.3	1.5	1.9
5.	83.8	79.2	83.4	86.0	88.2	95.2	2.2	1.9	2.0	2.0	2.2	2.7
6.	85.8	88.4	88.0	104.4	104.8	104.6	1.3	1.4	1.4	1.7	1.7	1.7
7.	104.0	100.8	104.4	115.8	126.4	127.4	1.4	1.4	1.5	1.6	1.9	1.9
8.	107.6	106.0	106.0	114.2	118.2	123.8	2.6	2.7	2.7	2.7	2.6	3.8
9.	76.8	78.0	74.4	79.6	74.0	89.8	2.1	2.2	1.7	1.8	1.7	2.5
GROUP A-II												
1.	85.2	88.0	90.8	88.6	81.8	84.6	1.4	1.6	1.6	1.7	1.48	1.5
2.	78.6	74.0	82.4	74.4	78.8	80.8	1.5	1.5	1.6	1.4	1.4	1.5
3.	69.6	66.0	67.8	73.6	72.8	74.8	0.9	0.9	0.9	1.0	1.0	1.0
4.	104.6	105.0	106.0	107.4	102.8	109.0	2.2	2.3	2.3	2.2	2.1	2.3
5.	67.0	68.8	63.4	53.6	64.2	63.2	0.9	0.9	0.9	0.7	0.9	0.9
6.	139.0	138.2	143.4	145.0	143.2	148.8	3.5	3.8	4.2	3.9	3.6	3.9
7.	87.8	90.4	90.4	90.0	90.6	90.0	1.9	1.8	2.0	1.9	1.9	2.0
8.	119.6	119.6	115.6	122.0	115.6	124.8	3.1	3.0	2.7	2.9	2.6	3.1
9.	94.0	91.4	96.4	94.8	94.6	99.4	2.4	2.4	2.6	2.3	2.6	2.7

Levels of lipid lipoprotein profile in group B.

Sl. No.	Name	Age (yrs.)	Weight (kg)	Height (Inch)	Indication	STC				STG			
						0day	PO3	PO10	1m	0day	PO3	PO10	1m
HYSTERECTOMY (PREMENOPAUSAL)													
1.	Heera bai	40	45	60	FUB	140	120	136		96	80	89	
2.	Shanti	32	46	61	Bad Cx	167	150	180		60	55	62	
3.	Vidya	40	45	61	Prolapse	145	142	146		104	100	98	
4.	Ram Rati	35	48	60	Prolapse	150	133	134		100	100	100	
5.	Kaushalya	30	45	61	Prolapse	150	130	200		80	84	96	
6.	Kesar	30	45	61	TO Mass	160	150	176		82	70	96	
HYSTERECTOMY (POSTMENOPAUSAL)													
1.	Deva bai	60	45	60	Prolapse	180	156	170		68	65	70	
2.	Heerabai	60	45	60	Prolapse	190	200	210		100	100	104	
3.	Bhagwati	50	49	61	Prolapse	200	180	186		80	72	96	
4.	Kesar	45	45	61	Bad Cx	250	196	210		86	70	82	
5.	Sukha devi	50	49	62	Prolapse	200	150	160		80	60	130	
6.	Ramkali	60	50	59	Prolapse	266	200	217		81	65	146	
7.	Khimiya	65	45	60	FUB	150	132	140		72	60	67	
HYSTERECTOMY WITH UNILATERAL OOPHERECTOMY													
1.	Harbi	40	40	60	Prolapse	157	150	200		63	69	103	
2.	Laxmidevi	35	42	62	FUB	153	150	157		98	93	100	
3.	Ram Murti	40	50	60	FUB	200	200	210		103	100	97	
4.	Avadh	35	48	62	Bad Cx	250	230	283		50	47	154	
5.	Urmila	36	45	62	Prolapse	150	145	217		57	50	146	
6.	Jagrani	48	48	61	PID C prolapse	167	153	213		63	54	133	
7.	Brij Kumar	45	49	61	Ovarian tumour	144	140	156	150	98	96	110	106
8.	Janki	37	42	61	FUB	140	136	140	140	104	100	98	110
9.	Kapoori	40	50	60	FUB	145	142	146	152	110	100	112	112
10.	Rajkumari	45	45	60	Bad Cx	250	240	280		80	86	130	

HYSTERECTOMY WITH BILATERAL OOPHERECTOMY

PREMENOPAUSAL

1.	Kala	38	46	60	Prolapse	200	150	200		57	50	90	
2.	Suman	45	50	62	Fibroid	167	149	136		57	57	90	
3.	Parwati	36	55	62	Bad Cx	166	150	204		67	50	83	
4.	Ramwati	45	46	62	Fibroid	176	160	210	205	96	80	118	-
5.	Anisha	36	45	61	Fibroid	200	170	230	235	100	76	130	128
6.	Savitri	30	40	61	Bad Cx	160	150	200		67	53	83	
7.	Devki	48	48	62	Fibroid	166	183	200		150	167	180	
8.	Asha	35	42	59	FUB	200	180	200		103	100	97	
9.	Kapoori	42	43	61	FUB	183	160	166		100	90	93	
10.	~~Khiiia~~ Jamuna	45	46	60	FUB	183	160	170		96	78	93	
11.	Khillan	48	50	63	Polyp	167	160	250		92	80	123	
12.	Shantibai	45	45	62	Prolapse	160	245	215		103	90	130	
13.	Lajwanti	35	45	61	FUB	135	130	135	150	71	76	84	88
14.	Lali	50	42	59	Polyp	137	130	150	156	70	65	76	78
15.	Shribabi	45	49	61	FUB	177	180	213	213	136	140	169	150
16.	Shyamabai	45	43	62	Prolapse	197	190	192	220	105	100	102	120
17.	Gomti	45	45	62	Ca Cx	154	140	180	200	90	96	100	120
18.	Munni Jain	40	50	61	FUB	214	200	238	250	98	100	120	125
19.	Kanti devi	35	45	60	Cervicitis	208	200	230	236	130	137	150	158
20.	Gaura	45	38	60	Fibroid	183	167	250		90	76	110	

POSTMENOPAUSAL

1.	Rambai	50	46	63	Prolapse	166	150	172		96	110	110	
2.	Siya Rani	50	40	61	Ca Cx	137	140	146	140	100	108	108	110

Sl. No.	VLDL				LDL				HDL				LDL/HDL			
	Øday	PO3	PO10	1m	0 day	PO3	PO10	1 m	Øday	PO3	PO10	1m	Oday	PO3	PO10	1 m
HYSTERECTOMY (PREMENOPAUSAL)																
1.	19.2	16.0	17.8		64.8	51.3	65.2		56	53	53		1.15	0.90	1.23	
2.	12.0	11.0	12.4		105.0	93.0	123.6		50	46	44		2.10	2.02	2.80	
3.	20.8	20.0	19.6		68.2	69.0	80.6		56	53	53		1.21	1.30	1.52	
4.	20.0	20.0	20.0		95.0	73.0	73.0		35	40	40		2.70	1.82	1.82	
5.	16.0	16.8	19.20		99.0	81.0	150.8		35	32	30		2.08	2.50	5.00	
6.	16.4	14.0	19.2		96.6	90.0	115.8		47	46	41		2.05	1.95	2.82	
HYSTERECTOMY (POSTMENOPAUSAL)																
1.	13.6	13.0	14.0		128.4	107.0	124.0		38	36	32		3.30	2.90	3.80	
2.	20.0	20.0	20.8		130.0	142.0	153.2		40	38	36		3.25	3.73	4.25	
3.	16.0	14.4	19.2		146.0	127.6	131.8		38	38	35		3.84	3.35	3.76	
4.	17.2	14.0	16.4		192.8	143.8	161.6		40	38	32		4.82	3.78	5.05	
5.	16.0	12.0	26.0		146.0	100.0	99.0		38	38	35		3.84	2.63	2.82	
6.	16.2	13.0	27.2		212.8	150.0	156.8		37	37	31		5.75	4.05	5.05	
7.	14.4	12.0	13.4		93.6	75.0	81.6		52	45	45		1.78	1.66	1.81	
HYSTERECTOMY WITH UNILATERAL OOPHERECTOMY																
1.	12.6	13.8	20.6		113.4	108.2	159.4		31	28	20		3.65	3.86	7.97	
2.	19.6	18.6	20.0		90.4	89.4	97.0		42	42	40		2.15	2.12	2.42	
3.	20.6	20.0	19.4		132.4	133.0	145.0		47	47	45		2.81	2.82	3.23	
4.	11.4	9.4	30.8		194.6	180.6	215.2		44	40	37		4.40	4.51	5.81	
5.	11.4	10.0	29.2		107.6	107.0	168.8		31	28	19		3.47	3.82	8.88	
6.	12.6	10.8	26.6		107.4	100.0	149.4		47	42	47		2.28	2.38	4.03	
7.	19.6	19.2	22.0	21.2	77.4	75.8	96.0	88.4	47	45	38	40	3.70	1.68	2.52	2.21
8.	20.8	20.0	19.6	22.0	63.2	63.0	67.4	68.0	56	53	53	50	1.10	1.18	1.26	1.36
9.	22.0	20.0	22.4	22.4	67.0	72.0	75.6	81.6	56	50	48	48	1.19	1.44	1.57	1.70
10.	16.0	17.2	26.0		194.0	182.8	217.0		40	40	37		4.85	4.57	5.86	

HYSTERECTOMY WITH BILATERAL OOPHERECTOMY

PREMENOPAUSAL

1.	11.4	10.0	18.0		157.6	111.0	157.0		34	28	18		4.60	3.90	8.70	
2.	11.4	11.4	18.0		117.6	110.0	96.0		38	28	22		3.07	3.92	4.36	
3.	13.4	10.0	16.6		99.6	93.0	156.4		53	47	31		1.87	1.90	5.00	
4.	19.2	16.0	83.6	23.6	117.0	108.0	156.4	151.4	47	36	30	30	2.38	3.00	5.21	5.04
5.	20.0	15.2	26.0	25.6	141.0	115.8	173.0	181.4	39	39	31	28	3.6	2.96	5.58	6.47
6.	13.0	10.6	16.6		104.6	93.6	135.4		48	46	48		2.17	2.03	2.82	
7.	30.0	33.4	33.6		98.0	111.6	130.4		38	38	36		2.50	2.90	3.60	
8.	20.6	20.0	19.4		132.4	113.0	136.0		47	47	45		2.81	2.40	3.02	
9.	20.0	18.0	18.6		126.0	106.0	107.4		37	36	40		3.40	2.94	2.60	
10.	19.2	15.6	18.6		129.8	108.4	114.4		34	36	37		3.80	3.01	3.09	
11.	18.4	16.0	24.6		98.6	105.0	193.6		50	39	32		1.97	2.69	6.05	
12.	20.6	18.0	26.0		85.4	83.0	153.0		54	45	36		1.58	1.84	4.25	
13.	14.2	15.2	16.8	17.6	78.8	76.8	82.2	96.4	42	38	36	36	1.87	2.02	2.28	2.67
14.	14.0	13.0	15.2	15.6	73.0	75.0	96.8	102.4	50	42	38	38	1.46	1.78	2.54	2.69
15.	27.2	28.0	33.8	30.0	100.8	107.0	140.2	145.0	49	45	39	38	2.05	2.37	3.59	3.81
16.	21.0	20.0	20.4	24.0	119.0	116.0	121.6	146.0	57	54	50	50	2.08	2.14	2.43	2.92
17.	18.0	19.2	20.0	24.0	96.0	85.8	128.0	148.0	40	35	32	28	2.40	2.45	4.00	5.28
18.	19.6	20.0	24.0	25.0	140.4	130.0	166.0	177.0	54	50	48	48	2.60	2.60	3.40	3.60
19.	26.0	27.4	30.0	31.6	125.0	116.6	145.0	161.4	57	56	45	43	2.19	2.08	3.22	3.75
20.	18.0	15.2	22.0		130.0	117.8	197.0		35	34	31		3.71	3.46	6.35	

POST MENOPAUSAL

1.	19.2	22.0	22.0		106.8	90.0	105.0		40	38	45		2.67	2.36	2.33	
2.	20.0	21.6	21.6	22.0	58.0	61.4	72.4	63.0	59	57	52	55	0.90	1.07	1.39	1.25

A P P E N D I X

APPENDIX

WORKING PROFORMA

TO STUDY THE SERUM LIPOPROTEIN CHANGES AFTER HYSTERECTOMY WITH OR WITHOUT OOPHERECTOMY

Case No. MRD/OPD No.

Name Age/

Address Religion

Socio-economic status D.O.A.

D.O.D.

SUMMARY

Present Gynaecological complaint :

Hormonal therapy :

Dietary history:

Past History :

Obesity :

Smoking :

Tobacco Chewing :

Physical Activity :

Diabetes :

Hypertension :

Jaundice :

Contraceptive pills :

PERSONAL HISTORY

O/H G P A LCB H/o Toxaemia

M/H : Menarche Cycle

Flow Clots

LMP Pain

GENERAL EXAMINATION

PR BP Pallor Icterus Ht. Wt.

SYSTEMIC EXAMINATION

RELEVANT INVESTIGATION

TLC DLC Hb ESR Blood Sugar

Urine : Sugar Albumin

Serum Creatinine Blood Urea

E.C.G.

Vaginal Cytology

Biopsy

USG

Indication :

Operation done :

Anaesthesia Date :

Post Operative

- Antibiotics
- Hormonal therapy
- Diet
- Stress

Lipoprotein levels in women going hysterectomy with or without oopherectomy.

Sl. No.	Investigations	Lipoproteins levels					
		Pre-operative	3rd POD	10th POD	Months		
					1st	3rd	6th
1.	Serum total cholesterol						
2.	Serum Triglycerides						
3.	Serum HDL						
4.	Serum LDL						
5.	Serum vLDL						
6.	LDL : HDL ratio						

SUMMARY

CONCLUSION

FOLLOW UP

COMMENTS